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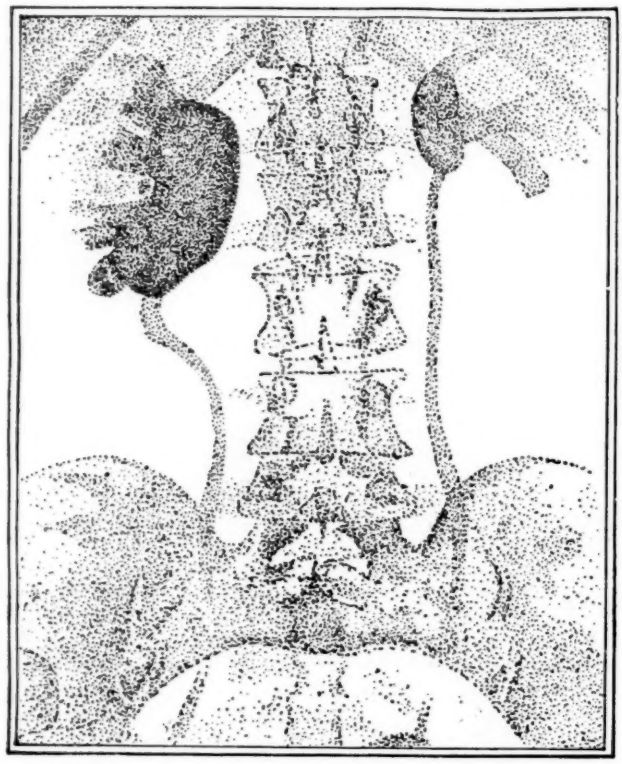

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## Observations
ON
# THE CONTROL OF TRACHOMA.*

BY
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TRACHOMA is practically extinct in England. It is still prevalent in some parts of the British Empire. It is rampant in some Eastern countries. Trachoma was at one time common in England. The conditions that have conduced to its virtual extinction are worth investigation. They may point the way to measures calculated to secure a similar result elsewhere.

The necessity for control of a disease depends upon the measure of the damage done by it. To obtain this measure there would be needed a census of the eye conditions of the population. This is manifestly impossible. But we can fairly compare figures drawn from the examination of sections of the population. These, although not national maps, may be fair average samples. Hospital figures cannot be considered such samples, for they are obtained from selected portions of the population. The most desirable figures are to be obtained from the schools, and from the examination of recruits for military service.

Van Millingen,[1] in 1895, collected figures for eighteen countries. Clemow,[2] in 1903, supplemented these figures. They showed the wide spread of the disease, and the unequal incidence in the several countries. I have collected some later figures, and these show that whereas in some countries there is an effective control of trachoma, in others the problem is still of great magnitude. From these figures we may judge the vast amount of suffering and loss of economic efficiency caused by the disease in countries where it is rife.

Egypt still heads the list of afflicted countries. In the last report[3] of the Ministry of the Interior of Egypt there are some astounding figures of the prevalence of trachoma among school children. An ophthalmic survey was carried out among all the pupils of the primary schools in certain capital towns of the provinces in which there were ophthalmic hospitals. There were seventeen schools with 8,045 pupils; "91 per cent. of all pupils were found to be infected with the various stages of trachoma, whilst 23 per cent. of the total were found attacked with the serious stages of trachoma." The figures are so amazing that one might ask whether the diagnosis of trachoma in so great a proportion of the children could be justified, and whether perhaps some other follicular condition might not have accounted for many. But there are available the series of reports of this department when the work was under the direction of A. F. MacCallan which fully bear out the high incidence. Also, there is Lister's[4] record of the examination of the Egyptian members of the Labour Corps employed in France by the British authorities in the great war—"at a low estimate 45 per cent. were either suffering from or had had trachoma."

China runs Egypt close. Some 25 per cent. of the population appears to be affected. In the dramatic story of Professor Harvey Howard's captivity by Chinese brigands[6] there is this passage:

> "Famines, floods and disease are rampant in China, but it is common knowledge that the most devastating of these three is disease. And of all the disease, the one that is the cause of the most misery and economic distress is probably trachoma. It is found all over China; it affects nearly every home, and all classes of society. From statistics I had gathered, I had come to the conclusion that fully one hundred millions of Chinese people have trachoma, and that probably five million new cases, mostly children, develop each year. I had estimated that not less than one million Chinese are blind in both eyes, and that three or four millions more are blind in one eye; further, that not far from twenty millions have had their vision so much impaired by inflammation and the formation of scar tissue, due to trachoma, that they are able to eke out only the barest kind of existence."

The situation in India is better. Members of the Indian Medical Service have told me that although there is much trachoma it is less severe than in other Eastern countries, and is less important as a cause of blindness. The reports of the Madras Government Ophthalmic Hospital[7] for the six years from 1923 to 1928 show that of an average of 21,000 new patients each year about 4.5 per cent. were suffering from trachoma.

There are two recent reports for European countries in the papers of the League of Nations. In Italy, Lutraria[8] reports that trachoma is met with in almost all parts, but it is most common in the islands of Sardinia and Sicily. The army figures of 1913 show that of 502,221 conscripts, 3,543, or 0.7 per cent., were rejected for chronic conjunctivitis believed to be trachoma. In some of the islands the proportion of rejections was four times as high.

In Holland, Josephus Jitta[9] reports that trachoma is found only in Amsterdam, mostly among the poorer Jews. A commission of inquiry sitting in 1914–17 reported the existence of 3,300 cases. Of 66,418 Christian children 2,396, or 0.6 per cent., and of 7,062 Jewish children 625, or 8.8 per cent., had trachoma. He is of opinion that trachoma is not endemic in the country, but that it was imported from Poland and Russia. He states that it is above all a family disease. Children are affected at an early age either by their parents or by older children.

In the British Isles, Ireland shows most trachoma. Story[10] reported that there was a decrease towards the end of the century, but that in later years it has increased.

> "Most of the credit for this increase is to be given to the American doctors, who inspected all immigrants to the United States at the Irish ports, and remorselessly refused embarkation to any with even doubtful signs of trachoma. Consequently, large numbers of most undesirable aliens were left stranded in Ireland—whole families, perhaps, from far regions of Eastern Europe, and trachoma accordingly became more prevalent in this country."

In England the figures collected in 1922 by the Committee on Blindness[11] were informative, but to my mind the best picture of present conditions is given by the figures of the London school children. London is a vast area; it includes every variety of social condition and a considerable alien community. For the children in the elementary schools there is a regular medical inspection, and there can be no doubt that every case of trachoma is accounted for. The cases found in the years 1925 to 1929 numbered 26, 20, 15, 15, and 27, so that for five years on an average roll of 650,000 children there was an average of under 21 cases of trachoma a year, or 0.00032 per cent. When we recall the risks of importation of trachoma through the huge shipping area of the Thames I think you will agree that trachoma is practically extinct in London.

In the United States, according to Webster Fox,[12] there is little trachoma among whites except in some isolated parts of Kentucky, West Virginia, southern Illinois, and Ohio. It is common among the Indians. In 1912 of 39,231 Indians examined in reservations 8,940, or 22.7 per cent., had trachoma. The percentage varied in different places from 68.8 to 0.2. In 1924 the Indians of three reservations were examined to the number of 18,830; trachoma was found in 3,986, or 21.2 per cent.

The foregoing figures are sufficient evidence that there is need for a better control in some countries than exists at the present time, and that no country can relax its vigilance.

### *Clinical Conditions.*

Trachoma means "a roughness," and a roughness of that silkiest of tissues, the conjunctiva. The name is a good one. In typical cases the roughness of the tarsal conjunctiva is uncanny. The term is an old one, and the disease is old. The disease was described, with an accuracy that will be little bettered to-day, in the works of Hippocrates and in the later authors of the Greek school, Aetius, Paulus Aegenetus, and Alexander Trallianus. There is one passage in Celsus which may be cited:

> Pejus etiamnum est (genus videlcet lippitudinis), ubi pituita pallida aut livida est, lacrima calida et multa profluit, caput

* Made in opening a discussion in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

calet, a temporibus ad oculos dolor pervenit, nocturna vigilia urget: siquidem sub his oculus plerumque rumpitur; votumque est, ut tantum exulceretur. Intus ruptum oculum febricula juvat: si foras jam ruptus procedit, sine auxilio est. Si de nigro aliquid albidum factum est, diu manet. At si asperum, et crassum est, etiam post curationem vestigium aliquod relinquit. (Lib.VI, cap. vi.)

The characteristic signs of the disease in its early stages are the slight ptosis of the upper lid, and a variable degree of discharge from the conjunctiva. The membrane shows a profuse overgrowth of the tarsal covering, so that it may look like a plush pile, or be grossly studded with enlarged follicles. Many cases are so little acute that there may be no outward symptoms of the disease save the slight ptosis, and in these the inflammatory process is dry and sluggish, and the harsh roughness of the tarsal membrane is marked.

Whether or not corneal involvement is a necessary clinical character of the disease is a moot point. Wilson[13] of Cairo thinks that it is. Other observers do not admit this. My own experience is that within the first year of the disease in children it is rare, and it may never appear if efficient treatment is begun early; but it is certain to appear in long-standing cases, especially among adults.

The disease is undoubtedly highly contagious. Doctors and nurses have been infected, and inoculation experiments have been done. Perhaps the most dramatic account of an experimental inoculation is that recorded by Treacher Collins[14] in his account of the London ophthalmia schools. Children were loath to leave the lovely country schools to go back to the old-time town barrack schools, and deliberately irritated their eyes to prolong their treatment.

"One child, whose name peculiarly enough was Sly, was admitted with marginal blepharitis and slight conjunctivitis; this was cured and all treatment was stopped preparatory to her leaving the school. She was then caught by the nurse taking discharge from another child's eye who was suffering from trachoma and deliberately putting it into her own. The symptoms of acute muco-purulent ophthalmia rapidly set in, and two months later typical trachoma follicles on the tarsal conjunctiva were recognized. After a year's treatment the trachoma was cured."

The most striking clinical feature of the disease is its chronicity. From six months to two years is its usual duration, and most cases extend to the longer term. So strongly is this impressed upon me that I am critical of my own or of others' diagnosis when a case of suspected trachoma reacts speedily to treatment!

The histological feature of the changes produced by the disease is the extraordinary proliferation of the lymphoid tissue. There is a diffuse lymphocytic infiltration of the conjunctiva with numerous follicles occupying the subepithelial layer. A follicle may measure from 0.5 to 2 mm. in diameter. The periphery of a follicle is formed of layers of lymphocytes; in the central area are many large mononuclear cells. All the changes are most marked in the retrotarsal fold, but no part of the conjunctiva is exempt. The beginning of a cure is shown by the breakdown of the centres of follicles and the gradual growth of connective tissue fibrils around the follicles. In advanced stages the fibrosis is so extreme that the follicles are strangled by the shrinkage of the scar tissue. Success in treatment is shown in a fine even spread of the scarring. Failure is shown by a gross unequal scarring and consequent distortions of the lids with all their painful and disabling effects. I am inclined to the view that the worst end-results are sometimes due more to ill-advised severity of treatment than to the effects of the disease.

### *The Causes of the Disease.*

The control of trachoma needs a knowledge of its cause and of the conditions under which it spreads. The primary exciting cause of the disease is as yet uncertain. There is a general agreement that it has the characters of a distinct entity, and such that it may certainly be ascribed to some virus. There is no doubt that its progress is affected by intercurrent infections, but none of these infections, which are common and well known, appears to be the determining cause. From the days of Koch's investigation of the disease in Egypt in 1883 there have been many attempts to identify specific organisms. So far no claim has been established. The most recent work is that of Noguchi,[15] a piece of experimental investigation of much promise. His *Bacillus granulosis* is described as being present in the affected tissues in extremely small numbers in the vicinity of the small and large mononuclear cells constituting the follicles. It has been isolated in cultures; then it is found to have a single polar flagellum. The cultures have been inoculated into monkeys, and have induced conditions of granular conjunctivitis apparently identical with trachoma in man. Wilson[13] of Cairo has published the report of an investigation he has made on the lines of Noguchi's work. His results are indefinite.

If the primary cause of the disease is uncertain there can be no doubt of some of the adjuvant causes. These are conditions of life which can be dealt with. Trachoma is rarely found except among people of low standards of living. It is found among squalid people who are herded together. In these conditions there is a common neglect of what we speak of as sanitary rules, but which may be better described as the rules of civilization. The easy communal generosity of the feckless has often been noted. Unfortunately this liberality extends to the use of sanitary articles which in more developed communities are regarded as strictly personal. It is, I believe, to the careless but pernicious generosity of these people that the ready dissemination of eye disease among them is due. When once the distinction of *meum* and *tuum* in regard to toilet articles has been learned there is a distinct rise in the standard of cleanliness, and therewith a lessened risk of communicable disease. I have known outbreaks of acute conjunctivitis in schools coincide with the breach of the rule of separate towels; and in no case have I known an outbreak spread where there was a strict re-enforcement of the rule. Confirmation of this observation may be obtained in the care of the men of the Chinese Labour Corps in France. These men at all times carried about their person a towel which was used for many purposes. It was freely loaned to companions. Lister found it necessary to arrange for a regular sterilization of these towels, and he was certain of the efficacy of this procedure.

### *London Schools.*

In former days the chief breeding places of trachoma in London were the Poor Law schools. The children of destitute families were drafted into huge barrack schools. These schools were ravaged from time to time by epidemics of ophthalmia, which was always endemic. Stephenson,[16] in an historical note, showed that the evil of these schools was known as early as 1848. In 1858 Bowman made recommendations regarding them. Ten years later similar recommendations were made by George Critchett. Nettleship in 1874 inspected all these schools, and of one he stated that "not 15 per cent. of the eyes could be described as healthy." A report in 1883 by Littlejohn, the medical officer of one of the schools, in which he said "Children have contracted the disease in the school . . . to an appalling extent," attracted the attention of Parliament. An isolation school for ophthalmia was provided under the care of Sydney Stephenson. From later London reports I find that the separate attempts of the local London Poor Law authorities were amalgamated by the Metropolitan Asylums Board. Two ophthalmia schools were established in the country north and south of London in 1903 and 1904 in charge of Treacher Collins. At the time of the foundation of these isolation schools the average number of children housed in the Poor Law schools was 10,800. The accommodation of the isolation schools was 720. In the first year 625 children were admitted, of whom 292, or 46.7 per cent, were suffering from trachoma. The segregation of affected children was so efficacious that in 1918 there were only 186 entries, so one of the isolation schools was closed. In 1921 there was a risk that the other would be closed too for lack of cases. It was therefore determined to admit children also from the elementary schools. Even with this far wider field from which to gather patients the demand upon the resources of the school at Swanley has been below the accommodation. In January, 1930, only 253 of the 364 beds were occupied. Thirty-nine were pauper children

gathered from the Poor Law schools with a roll of 6,375 children; 12 were cases from outside London; and 152 were elementary school children. Of the total cases 67 were trachomatous, or 26.5 per cent.

A most effective agency in the control of trachoma is the School Medical Service. For the past twenty-five years I have been intimately connected with this work in the County of London. My duties as ophthalmic consultant include work at a consultation centre at the County Hall, to which are referred children whose sight presents special difficulties in education or medical treatment.

By Act of Parliament the education authority is responsible for the medical inspection and treatment of the school children. The schools are visited regularly and all the children examined in specified groups. Those requiring treatment are referred to their home doctors or to school clinics maintained by the authority. Parallel with this arrangement there is the School Attendance Department, which has the duty of investigating the reasons for the absences of children from school. Absences of more than a specified period are reported to the head office for special investigation. This dual organization within and without the schools ensures a very completo supervision of health of the children.

The efficiency of the organization was well demonstrated a few years ago. Early in 1924 an unusual number of absences from school on account of "external eye disease" were reported by the attendance officers in the Thames-side districts of Poplar and Stepney. A batch of the affected children was brought to the consultation centre at the head office. I found them to be suffering from early and acute trachoma. Thereon all absentees and the other children of their families, and also the children of the schools they had attended, were medically inspected. A definite epidemic of trachoma was discovered among the children of a few schools in the poorest quarter close to the docks. Ordinarily cases of trachoma average a score a year for the whole school population of London. In this year, 1924, the numbers seen were: January, none; February, none; March, 17; April, 34; May, 51; June, 36; July, 51; August, 2; September, 4; October, 4; November, 10; December, 6; making a total of 215 cases. The affected children were transferred for treatment to the Swanley Ophthalmia School, now under the direction of Stephen Mayou, with the most satisfactory results. The epidemic was confined to the original area of its outbreak, and ceased at the end of the year. I have heard some hard sayings about the school attendance officer. It has been asserted he is as hard-hearted as the pedagogue of a familiar Pauline argument; but his strictness is an invaluable safeguard to the children, as was demonstrated in this outbreak. Imagine what might have happened in densely populated London if there had been no inquisitorial attendance officer.

### *War Conditions.*

An example of large-scale prevention and treatment is recorded by the ophthalmic surgeons[4 5] detailed during the great war for oversight of the Labour Corps. Large numbers of coloured men were brought into France for labour purposes. Trachoma was rife among them. It was recognized that with the proximity in which the individuals of the Labour Corps had to live there was a danger of trachoma becoming universal throughout these units. Had this occurred their capacity for work would have been greatly impaired, and there would have been a risk of the disease spreading to the British troops and to the French population.

The Egyptian labourers were highly affected. At a low estimate 45 per cent. were either suffering from or had had trachoma. Of the South African Cape boys only 3 per cent. were affected. The main problem was with the Chinese, of whom there were roughly 100,000. The incidence among them was 8 per cent.—that is, about 8,000 cases; besides these there were 5,500 cases of suspicious conjunctivitis.

The steps taken to remedy matters were three: (1) instructions were given that no labourers with trachoma should be recruited from abroad, and for those on the voyage sanitary treatment was given; (2) the affected men were segregated; (3) treatment was given to both the affected and the "clean"; the latter received zinc drops, and their towels were sterilized regularly. The effect of these measures was speedily apparent in the improved condition of the men and of their work.

### *Conclusions.*

The evidence presented in this paper points to two certain conclusions: (1) that trachoma can be controlled; (2) that the control of trachoma is a practical proposition. The measures requisite to this control may be viewed from two points: that of the country where the disease is endemic, and that of the country free from the disease. It will be agreed that the principal condition favourable to the spread of trachoma is squalor, the product of bad social conditions. If we can raise the social status of a community, the risks of communicating trachoma will be reduced until they are small—as in England. Social conditions can rarely be effectively altered by outside influences, but this can be achieved if the influence works from within the community. There is now scarcely a country in the world that does not maintain some sort of system of elementary education for its children. Where there is such a system there is ready to hand the basis upon which an efficient campaign against trachoma can be waged. The recognition that a school for children is a place for the training of the child in the use and care of its body, as much as for the training of its mind, will make the school the most efficient prophylactic against contagious eye disease. Instruction in the care of the body engenders pride of body, and this in its turn fosters a sense of separateness or fastidiousness which is offended by a community of interests in toilet articles. That lesson is, I believe, one of the chief gains of civilization; without it our cities would be pest centres, instead of ranking with health resorts. It would do more to extirpate trachoma than any other measure. It would create in countries where trachoma is rife the demand by teachers and parents for routine examination of the eyes of children on entry to school, at specific intervals, and of suspects at all times. Experience in London shows how readily medical inspection, at first resented, becomes demanded as a safeguard to all parties—the child, its family, and the teacher.

Discovery of disease demands treatment. Isolation ophthalmic schools, such as Swanley, are an economic proposition in countries where the incidence of trachoma is low; where it is high such measures are impossible. But it is possible to provide local dispensaries and travelling hospitals after the type of the beneficent foundation of Sir Ernest Cassel in Egypt. Further, it will be good practice to provide for the issue to the people generally of zinc sulphate drops. Regular and long-continued use of these drops in residential schools I have found safe and of value. There is evidence of their value in the control of trachoma among the coolies of the Labour Corps in France. David[17] in Palestine records that during a local epidemic of ophthalmia the school children were unaffected so long as they used the drops, but they fell victims to the attack when their use was stopped. Maybe there would be a few cases where intraocular inflammations would be injuriously affected by the use of the zinc drops, but even with that risk in view I think the universal use of the drops would be justified in a trachoma-ridden country. Finally, in such countries there should be a rule reserving appointments to posts in the public services to the healthy, and disqualifying candidates with trachoma. There can be no doubt that such a rule would furnish an effective "sanction" in a campaign against trachoma.

In a country where trachoma is rare there will be a justifiable demand for the exclusion of immigrants suffering from the disease. In these days of widespread travel the risk of entry of communicable disease into a clean country is great. Quarantine is no service in the prevention of trachoma. The disease is too enduring. Exclusion is the proper remedy. There have been at various times outcries against the action of some countries in rejecting immigrants for failure to attain standards of health. In my view stringent rules as regards health are wholly justified, both for the safety of the one country and for the improvement of the other. The fact that trachoma will exclude the immigrant in any country will do much to awaken the

authorities of a trachoma-ridden country to the disability under which its nationals labour, and to the necessity for remedial measures.

In conclusion, I would venture to reiterate my belief that the best line of attack is through an efficient school service. Through this we can get an oversight of the children such as no other means will secure. The school also tends to inculcate a sense of personal responsibility that is invaluable to the common health. There is no doubt that if we could keep the children of one generation free from the disease trachoma would be extinct.


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# SOME IMMUNOLOGICAL PROBLEMS IN SEPTICAEMIA.*


BY

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WHEN pyogenic micro-organisms overcome all defences of the body, travel freely through, and even on occasion multiply in the blood stream, giving rise to symptoms of a general invasion, the condition is recognized as septicaemia. Any definition of the term, however, is apparently subject to modification; for instance, with the extension and perfection of blood culture methods, micro-organisms may be recovered from the blood in many states, such as typhoid and pneumonia, which are not classed as septicaemia. Then, too, disease entities exist in which the evidence suggests that there is a general invasion of an ultra-microscopic organism or virus. The diagnosis of septicaemia, then, rests not alone on laboratory procedures, but depends also on the clinical evidence. For this discussion I will consider the type of case in which the symptoms of a general bacterial invasion overshadow those of local origin, and which is characterized, clinically, by chills, sweats, irregular temperature, and is associated with the finding in the blood stream of the causative micro-organism, generally a pyogenic coccus, most frequently a streptococcus. In the treatment of such cases the physician turns for help to the immunologist.

The origin and outcome of such a condition depend naturally, on the two interdependent variables—the infective agent and the patient's resistance.

## THE INFECTIVE AGENT.

Briefly let us consider the invasive power inherent to the micro-organism. What is the influence of numbers? We know that a measured quantity of a certain microbe may at times be required to induce a septicaemia, yet, clearly, it is not the determining factor, for the few streptococci driven into the tissues and the lymph channels by the prick of a needle may initiate a rapid and fatal type of the disease, while on the other hand a massive infection frequently remains localized. That the power of elective localization of bacteria has an essential bearing on the question has been clearly demonstrated by Rosenow. Even so, in elective localization the variable factor is in evidence, for a meningococcic infection occasionally exists only as a septicaemia, with no clinical or pathological evidence of any particular involvement of the meninges. Again, the *Streptococcus viridans* may invade the heart valves, which indicates that the microbe passed through the blood stream unaffected by the defences of the body, and possibly without giving rise at the time to clinical manifestations of its presence in the blood; subsequently a septicaemia arises from the endocardial focus.

An overwhelming invasion following the inoculation of a few organisms suggests that the circulatory system may be the elective site, for it is not unusual in some cases to find scant evidence that any particular tissue is involved, even though the micro-organisms may be noted in direct blood smears. Besredka, however, emphasizes the importance of tissue immunity at the primary site of elective localization; according to his theory a general invasion of the staphylococcus or streptococcus indicates a previous cutaneous or mucous area of infection.

The capacity to produce powerful toxins, to multiply rapidly, or to resist destruction is peculiar to certain bacteria. Such factors determine aggressiveness; while just as important, evidently, in favouring a continued bacteriaemia, is the inability of the causative organism to incite antibody production.

As a rule bacterial association favours a local infection, but that it is, in septicaemia, an important factor receives slight support; however, a simultaneous general invasion of more than one micro-organism may occur. Further, while one grants that septicaemias may be induced experimentally by the inoculation of a single selected strain of an organism, such as a streptococcus, yet the evidence shows that no single strain is responsible for all streptococcic septicaemias. Here, in carrying out agglutination tests with forty-five strains of streptococci recovered from as many cases of septicaemia, we failed to obtain any common agglutinative type.

Virulence as associated directly with the microbe lacks definition. More recent work, such as that of Falk, stresses the theory that the dynamics of the electro-potential differences of the cells underlie some of these problems. For the further elucidation of the term virulence as related to the micro-organism, Holman suggests more intensive physiological studies of the metabolism of bacteria. These factors are bound up with the structure of the microbe; how infinitely complicated this may be one can judge from the fact, as Cameron illustrates, that a comparable unit, such as a red blood cell, contains approximately a million million molecules and ions.

I have touched only on some of the principal characteristics of the micro-organism which are believed to determine its invasive powers, for aside from preventive measures, the nature of the microbe which infects the patient and produces a septicaemia is the accidental factor over which the physician has no control. The attenuation of the virulence of an infective agent by world-wide measures such as universal vaccine therapy is a problem not yet solved. In Winnipeg the incidence of septicaemia caused by the haemolytic streptococcus shows periodic waves, suggesting the prevalence at intervals of a type or types of this streptococcus favouring such an infection.

## THE PATIENT'S RESISTANCE.

The rapid spread of an infection from a small focus indicates primarily an inability of the phagocytes, either leucocytes or clasmatocytes, to cope with the infective agent. A determination of the opsonic index in such cases frequently shows that the blood is deficient in natural opsonins. These opsonins when present facilitate phagocytosis until such time as the body responds with the production of specific antibodies, including the thermostable opsonins, for the bacteria and their products responsible for the infection.

This weakness in the defence, which allows the extended invasion of some bacteria, particularly the pyogenic cocci, the haematopoietic tissues may attempt to offset by an overproduction of leucocytes. It was characteristic of the cases

* Read in opening a discussion in the Section of Bacteriology, Pathology, Physiology, and Biochemistry at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

of septicaemia in the series we investigated that an increasing leucocytosis paralleled a low opsonic index and a fall in complement. The frequent failure, however, of such a leucocytosis to overcome the infection suggests a more intensive effort on that ever-recurring problem—the early transference of specific immune bodies to such patients.

The production in the individual of specific antibodies to the infective organism requires time; the formation of such antibodies for the endotoxins and the bacterial substance postulates a previous dissolution of the bacterial cell. A haemolytic streptococcus or a staphylococcus invasion may progress with such rapidity that death occurs before the lysis of a sufficient number of bacteria takes place that would stimulate the production of the necessary antibodies. Such an argument, of course, does not take into account the elaboration of antitoxins for those exotoxins that the microbe may produce. Even so, the development of such antitoxins frequently requires more time than the urgency of the patient's condition allows. A *Streptococcus viridans* infection, on the other hand, will persist in the heart valves for months, with just enough production of antibacterial substances to limit the subsequent general invasion to an intermittent bacteriaemia.

Should a sufficient interval of time elapse for the development of a leucocytosis and the elaboration of antitoxins, and of agglutinins, precipitins, opsonins, and lysins, without evidence that the patient is overcoming the infection, then, two factors in resistance, based on current concepts of immunity, may be especially considered. First, that there may be a possible failure in antibody production, and second, that, even if such are elaborated, the body cells and fluids may fail to utilize them for the destruction of the micro-organism or the neutralization of the toxins. The failure in bacteriolytic action may result, in part, from a deficiency in complement, that property of the blood serum which the fundamental researches of Ehrlich and Bordet showed was essential to complete the lysis or death of bacteria in the presence of the immune body.

In this discussion I wish to dwell particularly on the influence of complement in septicaemia, a discussion which at once involves us in a consideration of the relation of complement to health and disease.

### *Complement in Health.*

Complement, as a substance or state of the blood serum, exists, so far as we know, in all normal individuals. I have found but slight variation in the titre of complement in the serum of the blood taken from 500 persons in normal health, and under normal conditions. This power of complement was determined by its action against sensitized sheep cells. However, a slight diurnal variation was noted; approximately a 10 per cent. increase occurred in the titre of the specimens of blood taken in the evening compared with those taken in the morning. The finding of a low complement power in a supposedly healthy person suggested disease or the results of disease; subsequent careful clinical examination of these persons proved this assumption to be correct. The results obtained indicate that complement is an attribute of health; further support of this statement is supplied by Huntemueller, who, following investigations on Olympic athletes, states that a fall in complement titre of the blood serum occurred in overtrained competitors, but such did not occur in those who were in perfect condition, even after sustained exertion.

While it was thought that the blood of all normal animals contained the usual amount of complement characteristic of the individual species, yet there has been reported the existence of a race of guinea-pigs which showed a deficiency of this quality in the blood serum. Moore pointed out that these guinea-pigs were less hardy than the normal animal, and that their opsonic index was about one-half normal. Coca determined that it was the third complement component, the heat-resistant or yeast-absorbed component, which was missing, and Hyde reported the arresting fact that this characteristic of the serums of these guinea-pigs was inherited as a simple recessive Mendelian unit. Pertinent to the discussion is the fact that the deficient serum or plasma could be activated by very small amounts of serum from man or normal guinea-pig, *in vitro* or *in vivo*.

### *Complement in Disease.*

Is it not important to recognize that the complement property of the blood varies widely during disease? In 1914 Gunn noted these changes in cases of typhoid, diphtheria, and scarlet fever. Our investigations, in part previously reported, of over one thousand patients, also showed that this property, as tested by the haemolytic system with sensitized sheep cells, varied from an increase of 20 per cent. over normal to a complete absence, depending upon the nature, location, and stage of the disease. As a rule these fluctuations follow a uniform course; commonly there is a slight increase in complement coincident with the onset of the symptoms of the disease; this is followed by a steady decrease until the infection reaches its maximum; during convalescence complement gradually returns to normal. However, in some cases, the complement property of the serum gradually decreases until no evidence of its presence, unless reactivated, can be observed by the use of the haemolytic system. These latter cases as a rule terminated fatally, but exceptions were noted.

More recently Hadjopoulos and Burbank, in an extensive series of investigations on the blood of persons in health and disease, arrived at similar conclusions, while Goldner stresses the association of a decrease in complement with those infections which interfere with liver function.

We observed that, as a rule, patients with chronic diseases such as tuberculosis, syphilis, chronic arthritis, uncomplicated malignant disease, goitre and diabetes, showed but slight oscillation in the complement titre of the blood serum. However, in a patient with an acute infectious disease, and particularly septicaemia, the fall in complement titre, following the initial rise, was rapid, and in the fatal cases, occasionally a complete absence, as determined by the method of investigation described, was noted.

What component of complement is missing in the serum obtained from the patients with these diseases I have not yet been able fully to determine; but a slight reactivation, 10 per cent., occasionally occurs on the addition of heated normal serum, while an average of 20 per cent. reactivation was obtained by the addition of that inactivated by ammonia. In some instances a slight reactivation was noted following the addition of serum which had been inactivated with a bacterial culture, yet if the blood of a patient with streptococcic septicaemia showed deficient complement, practically no reactivation could be obtained by the addition of normal serum which had been inactivated by previously mixing such serum with the specific streptococcus. Muir and Browning, however, have shown that the removal of the natural bactericidal power of normal serum by treatment with dead bacteria may leave the haemolytic power of complement unaltered.

The recognized necessary part played by complement in the antibacterial action of blood *in vitro* raises the question of the influence of this property in the circulating blood. Long ago Muir emphasized the importance of this factor in immunity, and the dependence on complement of the opsonic action of normal serum. Then, too, that complement exists in the blood plasma in proportional amounts to that noted in the blood serum has been shown by several investigators (Kolmer), and Hyde has demonstrated the action of haemolytic complement for foreign erythrocytes in the circulatory system of the frog.

The dependence on complement of the opsonic action of normal serum suggests that this property exerts some influence on the susceptibility to infection, but to what extent has not been established. However, the necessary part played by complement in bactericidal action in conjunction with antibodies indicates that it is an important factor in determining the limits of an infection. It is logical to infer, if not to state, from the available evidence, that a high complement titre in the blood of a patient with septicaemia aids materially in overcoming the infection.

### *Complement in Treatment.*

How may the treatment of septicaemia be influenced by deductions drawn from these observations? Small amounts of normal serum, even at times one-quarter of 1 per cent., will activate blood deficient in complement, both *in vitro* and *in vivo*. I have determined that the addition of small

amounts of normal serum would reactivate serum obtained from a patient's blood which was deficient in cytolytic activity; in patients showing a deficiency of complement resulting from infection, reactivation occurred following transfusions of small amounts of serum derived from the blood of normal persons or animals. This reactivation is immediate, and lasts, as a rule, two to three days, when the serum tends again to show a deficient complement titre, provided the infection which caused the original loss in complement has not abated.

In view of these findings it appeared logical to give repeated transfusions of small amounts of serum from the blood of a normal compatible donor to patients with septicaemia. It may be suggested that transfusions of whole blood would have accomplished the same purpose. Small whole blood transfusions do activate complement *in vivo*, but with this difference—that the decrease in complement titre which frequently again occurs about the third day is considerably more marked than that which follows transfusions of serum.

As regards massive normal blood transfusions for sepsis, I have observed in three patients who received such treatment that subsequently a severe loss of complement occurred by the third day, a greater loss than would be expected as the result of the infection, and within a week the complement titre of their blood serum had dropped 20, 40, and 50 per cent. lower respectively than before such transfusions were made. Consideration must also be given to the problem, as suggested by Wright, that such whole blood transfusions may furnish a pabulum which aids the further multiplication of the infective bacteria.

### *Antibody and Complement.*

We found in patients with sepsis that the relation between antibody and complement followed a general rule—namely, if the patient failed to improve, and the blood showed a high complement titre, then the antibacterial content of the blood for the causative micro-organism was low, and conversely, in such patients, if the antibody content of the blood was high then the complement titre held to low values. The immune content of the blood for the specific infection was determined by the agglutination reaction, and by complement fixation.

Provided the complement is normal or is raised to a normal power, then to complete the destruction of the infective micro-organism by bacteriolytic action, and to facilitate phagocytosis, specific antibodies are deemed essential. Yet the preparation of a specific immune serum for those organisms most frequently connected with septicaemia has always offered a problem of the greatest difficulty.

The frequent failure of the administration of an anti-streptococcic serum to benefit the patient in a case of streptococcic septicaemia is generally held to be the result of an absence in the serum of essential antibodies. The animal from which the serum was derived may have been immunized by a different strain of the micro-organism from the one responsible for the infection in the patient. In an attempt to overcome the latter difficulty we inoculated rabbits with separate vaccines and toxins prepared from over fifty strains of streptococci and staphylococci recovered from as many different patients with septicaemia. On experiment these animals became highly resistant to induced infection.

Further, Gay points out that the evidence indicates that the reservoir for antibody production is in the cells. Again, experiment shows that a specific stimulus, such as the inoculation of a vaccine, causes the appearance in the blood of homologous antibodies, if such are present in the tissues. Then, too, success in the treatment of septicaemia has been reported following transfusions of blood from a donor who had been previously inoculated with the specific organism. Sir Almroth Wright outlined the immunological factors involved in such a procedure, and the method has been further developed by Colebrook and Storer. I have applied these principles in an endeavour to increase the antibody content of an immune animal serum, which was to be used in the treatment of septicaemia. One of the rabbits which had been previously inoculated, as before described, with some fifty strains of streptococci and staphylococci, was re-inoculated with a broth culture containing the specific strain of the organism obtained from a positive blood culture, and several hours subsequently 8 to 10 c.cm. of blood were withdrawn from the rabbit's heart under aseptic precautions. The serum of such blood frequently gave a high agglutinative titre for the specific micro-organism with which the animal had been inoculated several hours previously. A further procedure was to inoculate rabbits on alternate days with a vaccine and toxin prepared from the microbe isolated from the blood of the patient. If the course of the disease allowed for a sufficient interval of time to elapse for these rabbits to have developed specific antibodies, the serum from the blood of such animals was also used. Cardiac puncture apparently causes the animals no harm.

### *Treatment with Normal and Immune Serum.*

We have treated with serum 56 patients who were suffering from septicaemia; the majority were in an advanced stage of the infection, and with these this method of treatment was adopted as a last resort. Forty-five recovered. Blood cultures showed: in 38 cases a haemolytic streptococcus, in 6 a *Streptococcus viridans*, in 5 a staphylococcus, in 1 an unidentified diplococcus, in 1 a colon bacillus, in 3 both a streptococcus and a staphylococcus, and in 1 a staphylococcus together with the *Bacillus pyocyaneus*. Each case in which blood cultures indicated a double infection proved fatal.

The following method of treatment was adopted. A compatible donor reported at the laboratory. From 60 to 70 c.cm. of blood were withdrawn from a vein in the arm into a large sterile vacuum tube. The blood was allowed to clot at room temperature, then placed in the ice chest. Five to eighteen hours subsequently the serum was drawn into a sterile glass syringe, and then the patient was transfused with this serum. These transfusions were given every second day; four of such treatments constituted the average number given to a patient. On alternate days 2 to 5 c.cm. of immune serum from a rabbit, prepared as previously described, were inoculated subcutaneously. It needs to be pointed out here, however, that the extended therapeutic use of rabbit serum has obvious limitations; the animals are small, comparatively short-lived, and susceptible to certain infections.

This method of treatment does not contraindicate the search for foci, and surgical intervention for the elimination of the same when such a procedure is feasible. Moreover, it is recognized that the nature of septicaemia varies widely, and a patient with apparently an overwhelming bacterial invasion may recover without special therapeutic aid; hence the value of any particular method of treatment, judged by clinical results, is open to discussion. Besides, as suggested by Churchman in a masterful review on the intravenous use of dyes, thought needs to be given to the possibility that attempts at rapid sterilization *in vivo* may defeat their own purpose; serious results do follow the too rapid absorption of freed endotoxins.

### Other Factors.

While one may stress the value of complement and antibacterial substances generally as a part of the defensive mechanism against an extended bacterial invasion, yet the importance of any single factor naturally varies with the individual case, also with the numerous associated processes. So interrelated are these that obvious difficulty arises in confining the scope of this discussion. One would like to consider the absorbing questions of the origin and nature of complement and of the influence of diet and drugs on this property, or of the chemical nature of antibodies and their possible synthetic production. Mention may be made, however, of the work of Mellanby and Green in the treatment of puerperal septicaemia with vitamin A; an evaluation of this work involves consideration of both the physiological and the biochemical relation of vitamins to immune processes. Then, too, the beneficial results occasionally obtained in sepsis, following the use of scarlet fever antistreptococcic serum, touches the live question of the relation of the toxins from the various strains of streptococci to one another. Also of arresting interest are

the observations of Gay, suggesting either the possible mobilization or passive transfer of the tissue macrocytes. In addition, the influence, however uncertain, of the bacteriophage demands attention; in five of our series of cases it was noted that following treatment the specific organisms were undergoing bacteriophagy; recovery occurred in these cases. In four cases with a fatal termination, when it was possible to obtain the organism from a focus, there was no evidence that a bacteriophage for the causative bacteria was present. According to d'Herelle, if a bacteriophage for a micro-organism causing infection is active *in vivo*, then the prognosis becomes more favourable.

It must not be overlooked that some cases of septicaemia offer little hope from the therapeutic standpoint. The destruction of tissue in scattered lesions caused by direct bacterial action is frequently beyond functional repair; especially does this apply to lesions in the brain or heart. Particularly, an infection engrafted on a previously injured heart and giving rise to a septicaemia generally signifies a permanently damaged endocardium resulting in cardiac incompetence that no method of therapy based on immunological studies will rectify. This latter problem suggests some other method of approach, and since a subacute bacterial endocarditis with an associated bacteriaemia is prone to develop in an individual with valvular lesions, then the possible prophylactic immunization of a person with a damaged endocardium by means of a polyvalent streptococcus vaccine deserves consideration.

Immunity problems of septicaemia naturally concern all the sciences represented in this Section of the Annual Meeting; possibly correlation of the results obtained through the various lines of approach, either clinical or experimental, may furnish some solution. Admittedly, up to the present, the clearing hewed out of the gloom of immunology by Pasteur, Ehrlich, and their disciples has been well and hopefully tilled, only to produce, in septicaemia, limited therapeutic results. The quickening light afforded by the efforts of those early workers now becomes shaded with the growing clouds of doubt, and some predict barren returns from further efforts in that field. They say we must seek or make new clearings. In advancing some of these problems for discussion to-day it is with the hope that the old furrows retilled, or possibly the turning of a new furrow, may prove the field still fruitful.

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# THE PLACE OF PASTEURIZATION IN A SCHEME OF MILK DISTRIBUTION.*


BY

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THE heating of ordinary milk during distribution is generally admitted to be an imperative necessity and is in fact demanded by many city ordinances. In other quarters pasteurization is looked upon as a temporary measure, advisable under present conditions, which it will in time be possible to discard like other methods of preserving milk, and which will cease to be employed in proportion as highly organized and efficient methods of production and distribution become general. Some nutritionists take a more positive view, and think that the sooner this time arrives the better it will be for the consumers, especially children. Some of the evidence on which an opinion may be based is clear enough; in other respects, it is still in an experimental stage.

My experience leads me to adopt the view that milk supplied in bulk for consumption in large urban areas should be submitted to pasteurization by approved methods, the most powerful argument being that the menace of milk-borne infections is thereby largely eliminated, and is restricted to such relatively infrequent incidents as may cause infection during or subsequent to pasteurization. Glasgow is no exception to the general experience that the increasing practice of this procedure has caused a corresponding decline in the capacity of milk to convey specific infection to the consumer. The pasteurizing of milk is now applied to between 80 and 90 per cent. of the city's milk, while about 70 per cent. of the supply is delivered in bottles. The history of milk outbreaks of disease, where the source of infection was at the farm, is entirely concerned with this diminishing portion of unpasteurized milk in the city's general supply.

As regards the history of pasteurization, this process was first practised in Glasgow in the late nineties of last century, when the "flash" system was introduced by the large distributors, that is, heating to about 160° F., followed by immediate cooling. Prior to this, the scalding or "scadding" of milk (to use a Scotticism) was resorted to by immersing cans of milk in open boilers at temperatures of 160° F. to 180° F., and thereafter cooling in running water. Subsequent to 1900, the rapid growth of the city demanded further supplies from greater distances, and pasteurization became more and more extensively employed to enhance the keeping qualities of the milk. The old flash system has been entirely superseded by modern methods, a change greatly assisted by the educative effect of the Special Designations Order of 1923, the transition to the positive holder type of pasteurizing machine as recommended becoming practically universal. There is a general reluctance to exceed a temperature of 145° F. and the United States standard of 142° F. is sometimes adopted.

Pasteurization grew up and was widely adopted for commercial reasons, as it augmented the keeping quality of milk. It preceded, but did not, as was sometimes feared, prevent the undoubtedly great improvements which have taken place in recent years in the standards of production of raw milk, a large proportion (at least 70 per cent.) of ordinary market milk being now comparable with that of grade "A" quality. "Those who are producing and retailing graded milk have made it clear that, with proper control, it is possible to produce and sell unheated milk successfully, even in the poorer quarters of London." This remark occurs in Research Monograph No. 1 of the Ministry of Agriculture and Fisheries (1929), and might be applied to any city. It is quoted to show the trend of progress in the domain of milk production, and may be taken to mean that the argument of "commercial necessity" in support of pasteurization has lost much of its force, except in relation to the transport of milk over long distances.

There is no doubt that pasteurization of milk has added to the security of cities against the danger of milk-borne infections. This is a matter of great importance, and the following local illustrations may be quoted from experience in Glasgow. All the outbreaks of infectious disease whose source was traceable to farms were associated with supplies delivered direct and untreated from the farm to the consumer, or formed that part of the supply of a particular centre of

* A paper read in opening a discussion in the Section of Preventive Medicine at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

distribution not subjected to pasteurization. The following incidents are taken from the records of recent years:

In 1912, a group of 19 cases of enteric fever on a milk supply delivered direct from farm to dairy was traced to a carrier at the farm. In 1927, an outbreak of 67 cases of paratyphoid B infection broke out on a similar direct supply. Five of the dairy farm hands gave positive blood reactions and two of them ultimately admitted having had mild and trivial recent illness. In 1913, there occurred 31 cases of scarlet fever due to a milker who had a mild sore throat and was not off work; she infected the dairy keeper with scarlet fever. In 1916, a group of 11 cases of scarlet fever originated from a girl, aged 12 years, at the farm, preceded by two cases of "tonsillitis" without rash. In 1918, a series of 19 cases of scarlet fever occurred on the early morning direct supply from a farm, the probable source being a suspicious sore throat in a girl milker at the farm. In 1919, there occurred 32 cases of scarlet fever on a direct supply, the source of which was not definitely ascertained. In 1923, a series of 23 cases of scarlet fever on milk direct from a dairy farm was traced to a missed infection in a child of the dairyman, who infected the milk during the convalescent desquamating stage of her illness. In 1925, a group of 6 cases of scarlet fever occurred on a farm supply where a young child was found with double otorrhœa following an apparently undetected attack of scarlet fever. In the same year, a series of 15 cases on a direct milk cart and dairy supply was connected with (*a*) scarlet fever in a farm labourer's child, and (*b*) otorrhœa following an unrecognized attack in one of the farmer's children. As regards diphtheria, in 1913 a group of 13 cases originated from a child at a farm who had had no definite illness but whose throat harboured the bacillus. In 1915, there occurred 115 mild cases in the neighbourhood of Glasgow, related to sores on the knuckles of three milkers and lesions on the udders and teats of eight of the cows. One of the milkers ultimately developed diphtheria, while "diphtheroid" bacilli were recovered from four of the cows and from the sores on the hands of the milkers. In 1922, a group of 10 cases on a direct supply was traced to a milker with enlarged tonsils harbouring the bacillus of diphtheria. There have also occurred two considerable and severe outbreaks of septic sore throat due to undetected mastitis in dairy herds. In one of these, pasteurization of the supply pending full investigation cut short the outbreak.

In all these instances the milk was delivered in its natural state, and was contaminated through the medium of an infected person on a farm supplying a local dairy in a suburban area. No similar incident has occurred on the main pasteurized supplies of the city. It has been pointed out that the purveying of milk is becoming concentrated in the hands of large distributors, supplies from numerous farms being mixed in wholesale fashion, so that the possibilities of spread from chance infections, such as those instanced above, would be greatly enhanced in the absence of an effective safeguard. Infections occur with sufficient frequency on the comparatively small proportion of raw milk to make one wonder what would happen if the protection of pasteurization were removed. When scarlet fever reached a high degree of prevalence three years ago, several patients were removed from dairy farms sending milk to the city from a neighbouring county.

As regards the possibility of eliminating these risks by more effective public health control, it must be confessed that this is a matter of considerable difficulty. The utmost precautions are defeated by such chance infections as those due to the very mildest cases of scarlet fever or diphtheria or paratyphoid fever, which are apt to be missed entirely. What is called "a chance risk of infection from some accidental carrier" is a real risk in populous areas. Many opportunities of infection occur among the personnel of farms in rural areas dotted with small townships and in proximity to a large city. Farms are no longer isolated communities; transport makes it easy for farm servants and their families to mix with the general population, and when infectious disease is prevalent in the district the dairying community does not escape its share. It is, in fact, far from being immune. Epidemiological considerations do not suggest that the safeguard of pasteurization could be substituted for preventive control, however rigorously applied. In times of epidemic prevalence of infectious disease and in the present circumstances of milk distribution in large areas, the source of an outbreak might have to be sought for among numerous farms. The fact is that no one who is not in perfect health should milk cows or handle milk, so mild and elusive are the forms which infection may assume. It would be extremely difficult for this standard to be reached by the several hundred individual farms supplying a large city.

How much dependence can be placed on pasteurization in the prevention of tuberculosis and to what extent bovine tubercle bacilli may survive this process are difficult questions to which answers are being eagerly sought. Investigations into the thermal death point of tubercle bacilli in naturally infected milk by L. J. Meanwell are referred to in the review of this subject contained in the Research Monograph of the Ministry of Agriculture and Fisheries issued last year. In view of the importance of correlating the experimental results with the ordinary commercial practice of heating milk, the conclusions reached are worth quoting in full.

"L. J. Meanwell carried out a long series of experiments in which he studied the thermal death point, at different temperatures, of *Bacillus tuberculosis* in naturally infected milk, and has published his results. In addition he has made an epitome of his own work and that of other people from which the following conclusions are drawn:

"First, that Meanwell himself carried out 39 experiments, in which naturally infected and apparently normal tuberculous milk was heated to 145° F. for 30 minutes, and found living tubercle bacilli present on one occasion. In a second series of 19 experiments he heated naturally infected tuberculous milk which did not appear to be normal to the same temperature for the same time and again found living tubercle bacilli on one occasion. Secondly, that an epitome of recent work upon this subject demonstrated that of the four workers who employed naturally infected milk for their experiments, three found living tubercle bacilli after heating the milk to 145° F. for thirty minutes. Thirdly, that negative results were obtained by those workers who employed cultures of tubercle bacilli or pathological material which required chemical treatment before it could be inoculated. Fourthly, Meanwell's work demonstrated that tubercle bacilli in naturally infected milk which had been heated to 140° F. for twenty minutes were usually destroyed, but that this combination of time and temperature left no margin of safety.

"Meanwell finally concluded that commercial pasteurization of milk at 145° F. for thirty minutes, when efficiently carried out, is usually effective in destroying the tubercle bacillus, but that milk subjected to this process cannot always be guaranteed to be entirely free from this organism, expecially when one takes into account the fluctuations in temperature, possible mechanical defects in the plant, and the natural desire to hold the milk at as low a temperature as possible in order to conserve the cream line. These factors are all liable to be present when working under ordinary conditions."

It therefore appears that, from an experimental point of view, pasteurization is effective in destroying tubercle bacilli in milk in proportion to the efficiency with which it is conducted. The question arises whether the positive holder method of heating milk, which, if carefully applied, fulfils the time-temperature conditions laid down, and which is now universally employed, does in fact constitute a safeguard against infection. Definite positive evidence on this point would be difficult to obtain. On the epidemiological side, there are certain suggestive features about the remarkable decline in the incidence of non-pulmonary tuberculosis which lend support to the view that pasteurization may have been a far from negligible factor.

During the last twenty years the death rate from non-pulmonary tuberculosis in Glasgow has fallen much more rapidly than has the corresponding rate for tuberculosis of the lung. Tracing the former rate since 1915, it is found that the decline in abdominal tuberculosis—that is, that form of the disease which is generally accepted as being caused by the bovine bacillus—has proceeded at an accelerated rate as compared with disease of other organs. Contrasting the five-yearly periods 1915-19 and 1925-29, the total decline for all ages is from 59 to 30 per 100,000 of the population, or 49 per cent., while for the three constituent groups, tuberculous meningitis, abdominal tuberculosis, and other forms of tuberculosis combined, the fall is from 24 to 16 (46 per cent.), 17 to 7 (59 per cent.), and 19 to 10 (47 per cent.) respectively. Taking the age period under 1 year, the fall in abdominal disease is from 106 to 22 (79 per cent.), in tuberculous meningitis from 177 to 80 (55 per cent.), in other forms 41 to 21 (49 per cent.). For children between 1 and 5 years, the fall is respectively 65 per cent., 36 per cent., and 60 per cent. There has thus taken place a decided reduction in the incidence of fatal non-pulmonary tuberculosis, a fact which is also associated with an increasing mildness in its various clinical manifestations. It will be observed that the decline in the abdominal form, especially at the younger ages, has been outstandingly rapid. These figures should, however, be accepted with some reserve, owing to the fact that in children, especially infants under 1 year, confusion

may readily arise in death certification as between abdominal and meningeal tuberculosis, both of which may be manifestations of a generalized tuberculous infection. .

It is clear that some powerful protective influence has been at work, the nature of which can only be surmised. As regards abdominal tuberculosis, this affection has become more difficult to recognize and more amenable to treatment, while tuberculosis of the glands of the neck, also regarded as mostly a product of the bovine bacillus, has markedly declined in incidence and severity. This reduction in bovine infections cannot be definitely ascribed to any particular underlying cause, but, in the absence of a satisfactory alternative explanation, it appears to me that pasteurization should be included among the likely factors and that public health administration should, for this reason, support the efficient pasteurization of ordinary market milk, excluding, of course, the designated milks from duly attested and inspected herds.

There is, however, another and highly important aspect of the matter, namely, the relative value of raw and heated milk as an article of food especially for children. Little is known about the chemical changes which take place in milk heated to comparatively low temperatures, although certain suggestive observations have been made indicating that pasteurization may assail the delicate nutritive qualities of raw milk to a material degree, and that fresh milk of high quality from accredited herds is best for young children. Such evidence as exists is conflicting, but should it be clearly demonstrated that pasteurization deprives milk of an essential constituent, there will arise the question of a radical change of policy in milk distribution in the interests of the young.

In conclusion, the systematic pasteurization of ordinary market milk intended for consumption in large urban areas is, in my opinion, unavoidable under present conditions where milk is collected and mixed from widely scattered and varied sources, not under such scrupulous control as to eliminate the risk of chance infections—a danger which experience shows to be very real. It is difficult to resist the view, which is supported by experimental evidence, that efficient pasteurization is of real protective value against bovine tuberculosis, and that this practice could not be dispensed with until tuberculosis in dairy herds has been reduced to a minimum.

# THE EARLY DIAGNOSIS OF INFECTIVE LATERAL SINUS THROMBOSIS.*

BY

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INFECTIVE lateral sinus thrombosis has for many years been one of the most dreaded complications of suppurative middle ear and mastoid antrum disease. The very high mortality resulting from this condition has of late years been largely reduced owing to the gradually increasing knowledge of the earlier symptoms and consequent earlier surgical intervention, so much so that the prognosis may now be said to be distinctly favourable in all cases of operation previous to the breaking up of the infected clot.

I have thoroughly examined the notes of the last hundred cases recorded at the London Hospital, and it is remarkable how seldom I have found the more serious or later symptoms, such as rigors and alterations of the central nervous system, mentioned in the notes of the more recent cases ; the mortality also has dropped over 50 per cent. in the last ten years. It is therefore of the greatest importance to the patient that the earliest symptoms should be most carefully investigated.

Of the 100 cases, 44 were associated with acute aural conditions (six months being taken as the acute period) and 56 with chronic suppurative aural conditions. Six of these cases were admitted to and eventually diagnosed in the medical wards, and one remained undiscovered till the post-mortem examination. The admission diagnoses were pneumonia 2, pyrexia of unknown origin 3, typhoid 1, and septicaemia.

It appears that children are more liable than adults, in the proportion of three to one, and males than females in the proportion of two to one.

Aural discharge previous to admission is almost universal, only 5 of the acute cases having no discharge : among the chronic cases 9 are noted as having no apparent discharge, though a history of previous discharge was obtainable in all of the cases.

Herpes and sordes about the lips and gums are extremely common symptoms and were present in almost all the cases. I consider this to be a very early indication.

Severe general malaise is another almost universal symptom of lateral sinus infection. It is probably the earliest of all. In only 3 cases was a positive blood culture obtained out of 42 cases where mention is made in the notes. Examination of the state of the blood does not help diagnosis, as mastoid infection alone would give similar results.

Downey's spinal test is only of value when the sinus clot has completely formed, and is of no assistance in the early stages.

Pain about the ear is another almost constant symptom ; in only 2 of the acute and 8 of the chronic cases was this symptom not mentioned, although deep-seated discomfort rather than actual pain is frequently mentioned in many of the chronic cases.

Headache is specially noted in 24 acute and 29 chronic cases, while a feeling of general malaise and ill-being is noted in almost all cases as having occurred in the earlier stages of the illness. Vomiting occurred in 16 acute and 31 chronic cases. The notes prove this to be almost invariably a late symptom, occurring in very acute or advanced conditions. Giddiness was noted only in 3 acute and 8 chronic cases, and I do not think that it is of any special significance in lateral sinus infection.

Temperature on the first day of admission was generally high. It was above normal in 36 and subnormal in 8 acute cases, while in the chronic the numbers were 46 and 8. In 68 per cent. of the cases the high night and low morning temperature predominated. Rigors were noted in 26 acute and 31 chronic cases. An early rigor or shivering fit was noted as an early symptom in almost 30 per cent. of all cases, but the subsequent frequent rigors were invariably a late and ominous symptom.

*Signs.*

Tenderness over the mastoid process occurred in 38 of the acute and 36 of the chronic cases, the most frequent sites mentioned being the tip and directly over the antrum. It was specially noted that in several chronic conditions tenderness was found only on deep pressure.

Tenderness down the neck along the course of the jugular vein was specially mentioned in 11 cases, two only being of the acute variety ; all except one chronic case were in advanced conditions.

Swelling about the mastoid or oedema was noticed in 27 cases, 9 being chronic. It is interesting to note that all these were in children, and it certainly seems that while the path of infection in the young tends to early involvement of the superficial mastoid cells and therefore a more ready diagnosis, in the less frequently affected adult the infection tends to remain in the deeper mastoid cells.

On examining the meatus, no discharge was discovered in six of the acute cases, though in all these the drum is mentioned as red and in four as bulging. Similar signs are mentioned in three chronic cases.

Redness or oedema of the posterior part of the meatal wall (post-meatal spot) near the drum is mentioned in 31 acute and 39 chronic cases. This I regard as the most important sign of mastoid disease and is alone a certain indication for operation. The presence of this " spot " is invariably mentioned in all cases during the last six years. As an indication of the great value of this sign, nine of the above cases were unsuspected and were found during the course of operation for chronic mastoid on patients with prolonged ear discharge and general seediness, and in whom the meatal spot was the main indicating sign for operation. Where this sign is definitely established I regard operation as imperative, even in

* The opening paper of a discussion in the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

the absence of any other operative indication, and I firmly believe that if thus rule is observed the dangers of lateral sinus disease will be almost entirely eliminated both in acute and in chronic cases.

Ophthalmic changes appear to be rare, and except for a very occasional squint (five cases in all, two being chronic) are rather late signs. Papilloedema was noticed in 12 cases (7 being chronic) and nystagmus in 15, 9 being acute.

Changes in the central nervous system were also very rare. Definite signs of cerebral irritation were noted in 8 cases altogether, 5 being of the chronic type, while disturbances of various reflexes were noticed in 14 cases, 9 being chronic. Facial paralysis occurred only in two chronic cases. Examination of the cerebro-spinal fluid is of no early value. It will only show whether there is any meningitis or not.

*Diagnosis.*

Having enumerated the various symptoms and their relative frequency I am now in a position to give a short clinical picture of an early case of lateral sinus infection.

If a patient with acute or chronic suppurative otitis media is found to be abnormally ill, yet with nothing definite to account for the grave general feeling of ill-being, suspect sinus infection; look into the meatus and should the red oedematous meatal spot be present—operate! The accompaniment of deep mastoid tenderness, herpes and sordes, a swinging temperature and auditory pain should complete the early diagnosis, and operation should then prevent the occurrence of the more obvious signs.

Another necessary early diagnosis may occur during a mastoid operation when it may be difficult to tell whether the interior of the sinus is infected or not. I make the following observations on this.

In the case of a perisinus abscess and a pulsating sinus surrounded with normal granulations, I have never known this condition not clear up with ordinary drainage. The wash-leather sinus is the other difficult type. Pulsation may be hard to get, though the sinus is felt to be full. Inserting a needle is dangerous, as is also opening, on account of the possibility of infection. If on compressing the sinus wall with a blunt probe and suddenly releasing I find the wall return to normal evenly and instantly, I always leave alone and watch for further indications later. This sign has proved to be of great value.

It will probably be a surprise to some of the specialists present that so little has been stated of pathological aids. I wish to make this point very definitely, that the early diagnosis of this condition can only be done on purely clinical grounds; if the surgeon waits till the pathologist has made his diagnosis for him the chances of the patient are greatly minimized.

The time to make the diagnosis is in the phlebitic stage, or not later than that of the mural clot. The pathological changes in the blood and cerebro-spinal fluid should have been prevented by the surgeon, and even if the patient is seen only at a late stage, there should be no need for a good clinical observer to lose valuable time in awaiting laboratory tests.

The differential diagnosis at this stage is rendered difficult by the absence of any definite symptoms in an otherwise generally ill condition. Unless the great importance of a previously discharging ear is recognized, it is quite easy to slip into such diagnoses as pyrexia of unknown origin and typhoid fever.

In all symptomless febrile conditions a thorough search of the usual toxic foci should be undertaken, and it ought then to be wellnigh impossible to overlook the existence of a suppurative otitis media. The resulting aural examination would disclose the presence or absence of the red oedematous meatal spot and offensive discharge. Having now been placed on the right track, the observer should easily elicit the other abstruse signs of an infective sinus. Being absolutely sure of the meatal spot I would definitely insist on a mastoid operation. If there is one thing that has impressed itself on my mind it is the mistake of looking for two morbid conditions in the same person. Coincidences of this character are extremely rare.

The alleviation of a chronic mastoiditis, even if the sinus is not yet infected, must surely be helpful; on the other hand, the finding of a recently infected sinus not only clinches the diagnosis but saves the patient from a much graver situation.

# FRACTURES OF THE ARTICULAR SURFACES OF THE KNEE-JOINT.*

BY

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Of all the injuries which affect the knee-joint those which cause most concern in practice are the fractures of the weight-bearing surfaces of the joint.

Statistical evidence is of little value in dealing with such a subject as this, because fractures of the articular surfaces of the knee-joint, exclusive of fractures of the patella, occur by no means commonly. At Salford Royal Hospital, Manchester, in the centre of a great industrial area, about 250 fractures of the lower limb are admitted to the wards each year. Two periods of three years were selected, and it was found that in the first period (excluding fractured patella and epiphyseal separations) 14 fractures of the articular surfaces of the knee were admitted, and in the second period 17 cases, an average of about 2 per cent. of all leg fractures admitted.

*Fractures of the Femoral Condyles.*

I intend first to deal with examples of the minority group—namely, the fractures of the femoral side of the joint. There are, in the first place, the gross fractures which split the two condyles apart and extend upwards along the shaft with more or less displacement of fragments.

FIG. 1.

FIG. 2.

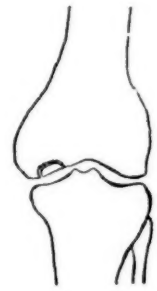

FIG. 3.

This is usually spoken of as a T-shaped fracture into the joint. A typical example of this injury is shown by an outline sketch from the radiogram of the right knee of a man, aged 51, who received direct violence from the impact of a motor car (Fig. 1). Under general anaesthesia extension was applied and adequate reposition of the fragments obtained. A Thomas splint bent at the knee to an angle of 150 degrees was applied. Union was firm after eleven weeks, and massage and active movements were commenced. A calliper walking splint was worn for a further ten weeks, and the end-result is shown, so far as knee movement is concerned, by further radiograms, which demonstrate the fullest voluntary extension and flexion—namely, 180 degrees to 75 degrees. Stability of the joint was good. The man returned to work twenty-five weeks after his accident. An example of a more severe fracture of this type is that shown by the next patient, a man aged 50. His right knee was crushed between two buffers and the joint surfaces of both femur and tibia were shattered (Fig. 2). A moderately good reposition of the fragments was obtained and a Thomas splint with extension applied. The end-result, as might

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

be anticipated from such an extensive articular injury, was poor as regards movement, a range from 180 to 140 degrees only being obtained. Stability was good and weight bearing painless.

*Fractures of a Single Condyle.*

The more usual type of fracture of a single condyle is that shown by a man, aged 35, whose knee was forcibly and suddenly abducted by a weight striking the outer side of the joint. The external condyle was found to have been fractured obliquely and forced upwards. Traction on a Thomas splint restored the position, and the end-result was good, there being a range of movement from 180 degrees to a right angle. Another and less common fracture of a single condyle is that in which the condyle is displaced backwards. In this case, a man aged 26 received a blow on the flexed knee in a motor collision; when I saw him eight weeks later the major portion of the internal condyle was found to have been driven backwards and a smaller fragment was lying loose in front of the joint. The loose portion was removed. The functional result has been excellent—a stable joint with a full range of movement.

*Osteochondritis Dissecans.*

In a description of the articular fractures of the lower end of the femur one must refer to the condition described first by Koenig as osteochondritis "dissecans," sometimes incorrectly referred to in textbooks as "dessicans." We are familiar with the punched-out area of articular cartilage, usually incompletely detached and lying in its bed in the lateral aspect of the internal condyle (Fig. 3). Are we to regard this as a fracture? Certain points in favour of this view cannot be neglected. The condition is found fifteen times more frequently in males than in females. Further, it is found usually during the most active period of man's working life. There is hardly a case on record where a trauma has not been noted in the history; lastly, the lesion is found at the point of greatest impact in the joint—namely, the area where the inner condyle bears against the tuberosity of the tibia. For these reasons I think we must regard the condition as a localized fracture of the articular surface, and, as the fragment fails to join up with the bed from which it is detached, it corresponds to an ununited fracture.

Microscopically it has been shown that, although the cartilage cells of these fragments are normal in appearance and seem to be viable, the underlying layer of bone is definitely dead. The cavity from which the fragment is punched is lined by a layer of fibrous tissue. Treatment consists in the removal of the fragment and the paring down of the overhanging edges of the remaining "crater."

*Tibial Fractures.*

The fractures of the upper end of the tibia are a more varied group, and present a number of problems. They may be divided into: (1) general fractures of the whole upper surface; (2) single tuberosity compression or avulsion fractures; (3) avulsion of the tibial spine and neighbouring cartilage; and (4) punched fractures of a small area of a tuberosity. The results of these injuries are often poor for these reasons—first, considerable comminution is present; secondly, there is difficulty of reposition of the fragments; thirdly, the frequent association of ligamentous tears; fourthly, the absorption of bone and cartilage which occurs, leaving an irregular articular surface; and lastly, the later development of osteo-arthritic changes. In general, one may say that the further away the fracture line lies from the centre of the joint the better is the prognosis.

The following cases illustrate the varieties of tibial fracture.

A man, aged 25, received a severe blow on the outer side of the knee at football. The outer third of the external tuberosity was broken off and displaced outwards and backwards. Under general anaesthesia it was manipulated into position and the knee fixed in a plaster cast for six weeks. Active movement was commenced at the end of this period. He commenced to walk a week later with a calliper splint, which was retained for three months. The end-result showed a little widening of the condyle with a perfect range of knee movement.

In the next case, a collier, aged 51, had a crush of the knee from a fall of coal; the upper tibia was shattered, and as there was a soiled wound leading almost to the bone it was impossible to do anything but apply extension to the limb, with some lateral compression of the fragments. The result was poor, with a union of the separated fragments and absorption of articular cartilage. The knee was stable enough for walking, and was not painful, but the range of movement was from 180 to 150 degrees only.

The next case is an illustration of the infinitely better result which can be obtained by open operation in this type of fracture.

A man, aged 25, received a direct blow on the head of the tibia in a motor cycle accident. Much shattering occurred, with

FIG. 4.

FIG. 5.

separation and displacement downwards of a large fragment comprising the internal tuberosity, tibial spine, and part of the external tuberosity (Fig. 4). Open reduction was performed, and the fragments fixed by a transverse ivory peg. A good apposition was thus obtained, and the limb fixed in a plaster cast for six weeks (Fig. 5). At the end of this time active movement was commenced. A calliper was fitted two weeks later, and this was worn for four months. At the end of six months he returned to work. The end-result eighteen months after the accident showed a very stable knee, with a range of movement from 180 to 90 degrees.

Punched fractures of the articular surface of the tibia are not uncommon, and are best dealt with, as in the case of the femur, by excision of the separated fragment.

A man, aged 30, fell 15 feet, and came down awkwardly on his left foot. The articular surface of the inner condyle of the tibia was fractured, and a fragment of cartilage and bone was removed. The specimen showed a piece of bone covered by articular cartilage about 1½ by 1/2 inch broad. The end-result after a year was good, and the surface had obviously regenerated considerably. Movement from 180 to 90 degrees was freely performed.

There remain to be mentioned the fractures of the tibial spine. These are usually brought about by severe wrenches of the joint, and are associated with more or less tearing of the crucial ligament.

An example of the less severe type is that of a woman, aged 40, who fell downstairs and wrenched the knee, producing a forced

FIG. 6.

FIG. 7.

adduction. The head of the fibula was avulsed and the tibial spine broken (Fig. 6). The knee was fixed in plaster for six weeks, and at the end of that time active movement was commenced. No calliper was worn, and the end-result was a perfectly functioning joint.

The last case I wish to refer to is that of a man, aged 36, who fell 20 feet from a scaffolding and suffered a complete dislocation of the right knee. The tibia was dislocated forwards and the tibial spine torn away, with complete rupture of crucial ligaments (Fig. 7). After reduction a plaster cast was applied, and retained for ten weeks. A calliper was worn for a further three months, and, later, a knee cage allowing movement from 180 to 135 degrees for another three months. At the end of a year the knee was fully stable, and the joint moved through a range of 180 to 90 degrees.

In summarizing I would say that, in my experience, the tibial tuberosities are broken more commonly by violence directly applied to the flexed knee or by forced abnormal lateral movement than by the so-called "compression"—a term so frequently employed in describing the fractures of this region. The tuberosities appear to be fractured with about equal frequency.

*Treatment.*

There is such a wide variation in this group of fractures that it is absurd to dogmatize and to insist, as many writers have done, that either non-operative or operative treatment is the method of choice for all types. Each must be treated according to its particular needs.

All fractures which involve the joint surfaces must be dealt with by early manipulation under full anaesthesia, so as to restore the position as perfectly as possible. Open operation must be resorted to if a satisfactory reduction cannot be otherwise obtained. Bone pegs should be used where the fragments tend to move so as to jeopardize the adequate reposition. Small separated fragments should be excised. Fixation in plaster for an average period of six weeks has been, in my own experience, the most satisfactory means of maintaining position.

*After-Treatment.*

In the later treatment a strong distinction must be drawn between movement and weight bearing. Gently graduated active movement should be commenced as early as possible after union is attained, but, in the severer injuries at least, weight bearing must be delayed for at least three months by the adoption of a calliper walking splint.

The end-result, after such treatment, is frequently better than the primary injury would lead one to hope for, but the recovery of movement is usually slow, and I have many times been surprised to find how a knee which has suffered a severe articular fracture and, at the end of six months, showed 30 or 40 degrees of movement would, after another six or twelve months, regain a range of more than a right angle of free and painless movement.

This paper was illustrated by numerous radiograms, of which a small selection are reproduced as line drawings.

# RADIUM IN GYNAECOLOGY.*

BY

SIDNEY FORSDIKE, M.D., B.S., F.R.C.S.

THIRTY years ago radium made an entry into surgical therapeutics, and was greeted with enthusiasm on reports of the cure of malignant tumours. Claims were made which were never substantiated, or results were so transient that recurrence of the growth followed hot-foot upon the reports. In the course of five or six years disillusionment was complete, and radium treatment was left to the few who still had faith. We are now in the second advent, and the enthusiasm displayed suggests that history is repeating itself. Responsible men are making themselves answerable for statements that 70 to 80 per cent. of early cancers are curable by radium; such claims may possibly be prophecy; they are not history. There is a glut of hastily written books on treatment by radium, and a still greater stream of reports of cases treated within the year. I recently attended a lecture by the director of a radium clinic who recorded cures of one, two, and three years' standing. What does the word "cure" mean? Is it the disappearance of symptoms for a limited time, or is it permanent freedom from disease? Assuredly the latter is the only meaning, and the propriety of using the word in any other sense is open to grave criticism. This enthusiasm, sired by our profession and nourished by the press, has placed an enormous sum of money in the hands of a Radium Commission for the purchase of 24 grams of radium element. It is proposed to distribute the whole of this for clinical work, not one milligram being allocated to biological research. One would suppose that there was nothing unlearned of the effects of radium upon living tissues, and that, given the supply, the disappearance of the cancer was only a matter of application. A certain amount of work has been done upon normal tissues, tissue cultures, and animal tumours. The knowledge gleaned from these sources is of great value, but it must be multiplied ten, twenty, and a hundredfold before we are in a position to direct the gamma ray with precision and certainty. At present the only research radium in the country amounts to something less than a gram, privately owned and divided into small quantities; if all the problems to be investigated are to depend on this supply alone, then another generation must pass away before they are solved. These problems are urgent and imperative, and must be attacked while the wave of enthusiasm is high. The Radium Commission would serve the community to the best advantage in the organization of research work and in the allocation of whatever radium was necessary for the purpose.

*How Radium Acts.*

It is a matter of dispute between workers whether radium acts directly upon the cell or upon the stroma. The microscope shows us the change of structure which has taken place in the tissue after irradiation, but it tells us nothing of how or why the change has taken place. The ingenious application of cinematography, by Canti, to irradiated tissue cultures has extended the knowledge acquired by the study of the dead cell, but while we have a dramatic view of the cell being struck down it does not solve the question why it is smitten. This effect may be due to direct action on the cell by the gamma wave, but it is equally probable that it is caused by a primary change in the stroma. After a long investigation[1] of the effects of radium upon normal and malignant tissues I was forced to the conclusion that the primary action was upon the stroma, and the cell change secondary to it. This problem, however, is not to be settled by the study of structure alone; it must be combined with observation of the change of function in secreting and excreting glands after irradiation. Furthermore, the help of the biochemist must be enlisted to investigate changes in the chemistry of the cell after exposure to radium. The importance of this question cannot be exaggerated, for upon its solution depends the decision of the dose to be employed.

*Screens.*

One would think that the value of metal screens must have been settled long ago, and yet the following values are given in three different books for the absorption of 99.9 per cent. beta rays:

| | Brass. | Silver. | Lead. | Platinum. |
|---|---|---|---|---|
| Cade... ... ... | 1.60 mm. | 1.30 mm. | 1.20 mm. | 0.60 mm. |
| Larkin ... ... | 2.0 mm. | 1.0 mm. | 1.0 mm. | 0.50 mm. |
| Simpson ... ... | 1.10 mm. | 0.80 mm. | 0.80 mm. | 0.40 mm. |

Russ[2] has shown that with 0.5 mm. platinum about 20 per cent. of the ionization is due to the moderately penetrating rays, and they are responsible for the necrosis which occurs around the source of energy. This necrosis is either beneficial or inimical to the treatment, and therefore it is of paramount importance to ascertain the true value of the screen. Needles containing one, two, three, or more milligrams of radium element are being used for cancer of the tongue, breast, and cervix with a thickness of 0.5 mm. platinum, and the immediate results are reported to be satisfactory. On the other hand, the Radium Institutes of Stockholm[3] and Paris use a minimum equivalent of 1 mm. platinum, from which permanent results are reported. It is not probable that both methods are equally favourable, and it is imperative to determine which is the more favourable. Some experiments by Lazarus-Barlow,[4] in which he used screens of varying thickness—0.5 mm., 1 mm., 1.5 mm., and 2 mm. platinum—throw light on this problem. He found that the minimum injury to normal tissues and the maximum to actively proliferating cells was produced when the heavy screens were used. These results are crucial, but they need to be

* Read in opening a discussion in the Section of Obstetrics at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

repeated and extended. A further point which needs investigation is the radiation value of the metals used for screens. Physicists tell us that 1 mm. platinum is equivalent to 2 mm. lead in screening power. Is it certain that the gamma wave which has passed through lead has a similar value to the gamma ray which has passed through platinum? Discrepancies in clinical and experimental work when using different screens of equivalent value suggest that this may be one source of error.

### *Split Doses.*

A problem equally pressing is whether the dose should be applied continuously or divided into two or more exposures. How far do living tissues conform to physical laws? *Ceteris paribus* the ionization effects of 100 mg. of radium element for one hour are equal to 50 mg. for two hours. Does the law hold when living tissues are in question? In practice Radiumhemmet gives three large doses at intervals of ten and twenty-one days, whereas the Curie Institute gives a prolonged exposure of four, five, or six days of a smaller quantity. Can it be that both methods are equally favourable, or are we treading the radium path blindly? Some experiments recorded by Lazarus-Barlow[5] suggest that this is a complicated problem. Using the same dose of radium, he employed a large quantity for a short time and a small quantity for a relatively long time, and found that the results upon columnar and squamous epithelium were practically reversed. He concluded that the same arrangement of time and quantity in a dose of radium produces very different effects when acting upon the three types of epithelial tissues—columnar epithelium, dry squamous, and moist squamous epithelium. Maximum effects are produced upon the epithelial cells, and minimum effects upon the associated tissues in the case of a columnar-cell growth when the quantity of radium is relatively large and the time relatively small; whereas in a squamous-cell growth the optimum effects are produced when the quantity of radium is small and the length of exposure relatively long. It is obvious that these experiments go to the root of the problem, but they need amplifying, and research work with this object must be organized.

### *Treatment of the Regional Glands.*

Finally, the clinical problem arises as to the treatment of the regional glands. The weakness of the Radiumhemmet technique is that it relies upon uterine and vaginal radium entirely, which means that the involved glands are being treated palliatively.

Various methods of applying radium in the pelvis have been tried, from Dael's chain, implanting radium and packing the pelvis with gauze for a week, fixing radium in drainage tubes, which are brought to the surface through stab wounds, to burying radium needles for a week, at the end of which time a second laparotomy is performed to recover them. These methods are uncertain, inexact, and make a big call upon the woman's fortitude and courage. Some of these methods have been described as a "barrage of radium," an unfortunate term, for it is as likely to form a mental barrage to progress as a radiological one to exclude the cancer cell.

Recasens (Madrid)[6] has combined $x$ rays with radium for many years, and claims improved results over radium treatment alone. However, as far as I know, he has not published statistics in support of this claim. The Curie Institute has been using $x$ rays as well as radium since 1923–24; a comparison of its results before and since should prove instructive. A third method is coming into use in which the treatment of the cervix by radium is followed by excision of the regional glands. It is obvious that with such varied practice there is urgent need of organized research in this direction.

## RADIUM IN BENIGN CONDITIONS.

Whatever the view may be with regard to the treatment of carcinoma, there is no doubt about the efficacy of radium in producing an artificial menopause. Even here, however, there is a difference of opinion upon two important points: (1) dose of radium; (2) whether the endometrium or the ovaries are affected.

### *Dose of Radium.*

Here we find the differences somewhat startling.

50 mg. radium element in 0.5 mm. platinum *in utero* for seventy-two hours.

100 mg. radium element in 1 mm. platinum *in utero* for forty-eight hours.

100 mg. radium element in 1 mm. platinum *in utero* for twenty-four hours.

The object we have in view in menopausal haemorrhages is to convert the endometrium into connective tissue without the production of necrosis. We find that this occurs experimentally and clinically when the hard gamma ray is used alone. A long exposure to beta rays produces necrosis of the tissues in the immediate vicinity of the radium. In the case where 50 mg. of radium element protected by 0.5 mm. platinum is placed *in utero* for seventy-two hours, 20 per cent. of the ionization effects are due to hard beta and soft gamma rays; necrosis ensues, and if it remains aseptic partial or complete obliteration of the uterine cavity occurs. Complete obliteration may or may not be desirable, but with partial occlusion there is a grave risk of pyometra. If the necrosed surfaces become infected sloughs of the endometrium and secondary haemorrhage follow, and when healing does take place it is again by way of partial or complete closure of the uterine cavity.

The larger doses of 100 mg. of radium element in 1 mm. platinum for twenty-four and forty-eight hours rarely result in necrosis, but it is quite common to hear of severe irritation of the bladder and rectum. This irritation is often transient, but it sometimes lasts for months despite all treatment, and the patient has exchanged painless haemorrhage for continuous pain and discomfort. Ascherson[7] reports the local changes which occur as a result of these heavy doses: hour-glass contraction of the vagina, atrophy of the portio, shortening and stenosis of the vagina, and ovarian neuralgia.

In 1926[8] I published the results of 200 cases of severe uterine haemorrhage treated by 53 mg. of radium element in a screen equivalent of 1 mm. platinum placed *in utero* for twenty-four hours, and expressed the opinion that this dose was probably unnecessarily large. Since then I have (in some cases) reduced the time to twenty-two hours, and the results are no less satisfactory; with these doses there has not been a single complaint of irritation of bowel or bladder.

### *Does Radium Act upon Endometrium or Ovaries?*

The German view, arguing from the analogy of the Roentgen ray, that "radium acts by castration," is still widely held, despite clinical, physical, and experimental evidence. The law of inverse squares was ignored; the three and a half inches separating normally placed ovaries from radium placed in the uterine cavity was forgotten; the knowledge that the demonstrable action of radium upon tissues under similar conditions is limited to three-quarters of an inch was unknown when this argument was advanced. To settle this problem I undertook a critical investigation on the ovaries of cats, in which the conditions were precisely similar to those in clinical work. The results were conclusive in showing that the ovaries remained unaffected, and that the changes in the endometrium were alone responsible for the cessation of haemorrhage. An account of these experiments and analysis of the clinical evidence was reported to the Gynaecological Section of the Royal Society of Medicine.[9]

## FIBROIDS.

Radium is used in the treatment of these tumours, but in my opinion when treatment is required at all it should be by excision, because while radium banishes haemorrhage and causes the tumour to shrink, it will not make the growth disappear. Fibroids are peculiarly liable to degenerative changes, and therefore it is advisable to remove them. The only exception is where haemorrhage is the cardinal symptom, and a small fibroid is discovered during an examination under anaesthesia; in such cases treatment by radium is justifiable.

### RADIUM TREATMENT OF CANCER OF THE CERVIX.

It is slowly being recognized that the early results are not permanent in the majority of cases, and therefore not worth recording except as evidence of the value of radium for palliative treatment. Reports on a five-year basis will alone enable us to assess the true value of radium in the treatment of malignant disease, and for this purpose they are equally important, whether favourable or not.

The classification of cancer of the cervix under the international standard is not easy, for the definition which creates Classes 2 and 3 covers inflammatory as well as malignant conditions, and it is sometimes impossible to differentiate between them. My series of cases in the five-year period 1921 to 1925 consists of 211, divided as follows:

1. Cases in which the disease was limited to the cervix (operable) ... ... ... ... ... ... ... 14
2. Cases in which the vagina and parametrium was involved and the uterus tethered (borderline) ... 53
3. Cases of advanced disease (inoperable) ... ... ... 144

#### *Operable Cases.*

The following table shows the results in the 14 operable cases:

| Recurrence of Growth. | | | | Remained Free = 28%. |
|---|---|---|---|---|
| 1 year. | 2 years. | 3 years. | 4 years. | 5 years and over. |
| 3 | 4 | 2 | 1 | 4 |

*Remained Free.*—One patient was alive and well nine years after treatment. One died of chronic bronchitis and cardiac failure seven and a half years later. She had been treated with radium and *x* rays. One was alive and well six years later. The fourth was alive and well five years afterwards.

*Recurrence of Growth.*—In three patients recurrence took place in the cervix, and in five a pelvic mass developed while the cervix remained healed.

#### *Borderline Cases.*

In 20 of these cases the condition improved so much after the first exposure to radium that I performed the radical operation upon them. The results of the remaining 33 are as follows:

| Recurrence or Death within 5 years. | | | | | Remained Free = 12%. |
|---|---|---|---|---|---|
| 1st year. | 2nd year. | 3rd year. | 4th year. | 5 years. | 5 years and over. |
| 13 | 8 | 6 | 1 | 1 | 4 |

*Remained Free.*—In one a laparotomy had been performed at another hospital for a Wertheim's operation, but it was abandoned. She has remained under observation for eight and a half years, and is free from disease. The second was under observation for six years, during which time she remained well. The third is alive and well at the end of six years. This patient was treated with radium and *x* rays. The fourth is alive and free from disease after five and a half years.

*Recurrence or Death within Five Years:*

*Case 180.*—This was a carcinoma of the stump of the cervix occurring some time after a subtotal hysterectomy. Three years after treatment her right breast was removed for a malignant growth. Two years later, and five years after the radium treatment, she returned with a mass in the pelvis, but whether it was a metastasis from the breast or a recurrence from the cervix was not decided.

*Case 172.*—In this case the patient died from cerebral haemorrhage four years after treatment, but there was no recurrence of disease in the pelvis.

Of the 13 patients who were lost or died within the first year, one died of uraemia after one exposure, and one patient had one exposure and then underwent an operation at another hospital.

Recurrence took place in the pelvis in 10 of these cases. It is worth remarking that of the 14 operable and the 33 borderline cases, recurrence deep in the pelvis occurred fifteen times, which corresponds approximately to the number of cases in which the glands are found to be involved.

#### *Inoperable Cases.*

*Recurrences after Wertheim's Operation.*—These cases numbered 40. The difficulties attending their efficient treatment by radium are insuperable owing to the proximity of the bladder and rectum, and I have derived no encouragement from my results. Temporary relief was the best sequel, and not one patient survived beyond one year. Vesical fistulae occurred in three cases, but it is not possible to say whether this was due to the growth or to the radium; it is certain, however, that a fistula would have resulted if left untreated, but it is probable that the treatment hastened the condition.

*Advanced Cases.*—There were 104 of these, 10 of which were not suitable for treatment on account of fistulae, metastases, or cachexia. Of the 94 treated 73 died in one year, 16 in two years, 2 in three years, 2 in four years, and 1 in five years.

At this stage of the disease there is no hope of curing the patient, but the symptoms, haemorrhage, offensive discharge, and pain are relieved in 80 per cent., and life is prolonged in comfort for 20 per cent. In the cases which survived for three, four, and five years a slowly enlarging pelvic mass was present throughout, and pressure symptoms ultimately appeared.

In this class recto-vaginal fistulae occurred in two cases and vesico-vaginal fistulae in three. In advanced malignant disease of the cervix fistulae are of common occurrence before the termination of life, and it is not possible to attribute them to the radium alone. I had to ligature the internal iliacs for secondary haemorrhage on eight occasions; in three of these cases a virulent infection was present, and it is probable that the arterial wall had undergone such changes that secondary haemorrhage was imminent, for in two of them it appeared within three days of the first exposure. In the third patient there was an interval of fifteen days between the first and second exposures, and the haemorrhage ensued immediately after the second. In the other five cases healing of the ulcer had made great progress, but had reached a callous stage in which a small unhealthy cavity was surrounded by a massive deposit of fibrous tissues.

#### *Summary of Results.*

The total number of patients treated by radium was 181. In the inoperable cases the results were: palliation and prolongation of life, 134—none cured; borderline cases, 33—4 cured; operable cases, 14—4 cured.

The rate of cure in all the cases treated by radium was 4.5 per cent., or 1 patient out of 22; in the borderline cases 12 per cent., or 1 patient out of 8; and in the operable cases the rate was 28 per cent., or 2 patients out of 7.

If the advanced cases, where no cures could be expected, are omitted there were 47 operable and borderline cases, of which 8 were cured (17 per cent.), or 1 patient out of 6.

#### *Remarks.*

These issues were not comparable to those of Radiumhemmet or to those obtained by operative surgery, and I attributed the comparative failure to an immature technique which was tentative and unsettled. Therefore in the current five-year period I adopted the technique of Radiumhemmet in one series of cases, and that of the Curie Institute in another. The latter I abandoned after treating twenty cases, owing to the production of callous ulcers which never completely healed. I persevered with the Stockholm technique, and, although the five-year period is not yet up, the conclusions do not show any improvement. I visited the Institutes of Stockholm and Paris to ensure that my methods did not differ in any material way and was satisfied that the technique offered no reason for the marked difference in results.

I remain a believer in the future of radium, but feel that to-day we are a long way from accepting it as a sovereign cure for all malignant tumours; in the meantime I am convinced that surgical treatment offers the patient a better chance of cure. Unless our knowledge of radium

is greatly increased, and the immediate results of treatment are placed in proper perspective, I foresee a general resumption of treatment by operative surgery.

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# Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

### NODULAR SPLENIC TUBERCULOSIS WITH GROSS ENLARGEMENT.

THE fortuitous discovery of a case of tuberculous nodules of the spleen, with gross enlargement of the organ, seems to be worthy of record, in view of the rarity of such an occurrence in an otherwise healthy subject.

A youth, aged 22, met with sudden death in a motor collision in May. He had had no previous illness, and the family history was good.

At the post-mortem examination fracture of the skull was found, but there was no disease of the organs other than the spleen, which was full of nodules; these on microscopical examination, were reported to be tuberculous in origin. They were whitish yellow, ranging in size from that of a pinhead to at least 1/4 inch in diameter. They projected slightly beneath the capsule, and also from the cut surface. On section conglomerate tubercles were revealed, with scattered giant cells and numerous epithelial cells. The larger nodules showed commencing caseation.

Section of Spleen.

The case is interesting because it is rare for tuberculous infection of the spleen to occur apart from similar manifestations elsewhere. Moreover, it is unusual for such great enlargement to be caused by numerous nodules; the organ measured 6½ by 4½ by 3 inches, and weighed 9 ounces. This occurrence must be extremely rare in a youth otherwise perfectly healthy at the time of death.

I am indebted to Dr. J. A. D. Radcliffe (pathologist to the Royal Portsmouth Hospital) for the pathological report.

Southsea. R. HAMER HODGES, M.B.Lond.

### REMOVAL OF SAFETY-PIN FROM DUODENUM.

CERTAIN interesting features of the case here described justify, in my opinion, its publication.

On May 26th a male infant, aged 6 months, was brought to me by the mother, who stated the child had just swallowed a small safety-pin. The child appeared quite at ease, but an *x*-ray examination revealed the pin lying open to the right of the second and third lumbar vertebrae, probably in the pyloric end of the stomach. Examination of the abdomen showed no sign of peritoneal irritation, but the child was admitted to the Great Western Hospital for observation, and *x*-ray photographs were taken on four consecutive days. Since the pin, however, remained in the same anatomical position and continued to lie vertically, suggesting that it had become fixed in the stomach wall, I decided to remove it.

On May 29th a general anaesthetic was administered, and the abdomen was opened by an upper right paramedian incision. To my surprise I was unable to feel the pin in the stomach, but eventually it was located in the duodenum at the junction of the second and third portions. It is rather surprising that an open safety-pin can proceed as far as the third part of the duodenum before it becomes anchored. I refrained from opening the duodenum, since it is difficult to manipulate this part of the organ, especially in an infant, and also one hesitates to open it because of its liability to leakage. I therefore incised the stomach about one inch proximal to the pylorus, and attempted to coax the pin up from the duodenum into the stomach. It appears that the pylorus of an infant will just admit the little finger, but it was impossible to pull the pin up—even with the aid of forceps—owing to its being fixed to the duodenal wall. The stomach was therefore closed.

It appears that the pin was caught in the wall of the duodenum; I succeeded in completing the perforation, and in forcing out the pin as far as the head. It would have been almost impossible to incise the third part of the duodenum and to suture it successfully without fear of leakage. A purse-string suture was passed around the pin, and by means of a sharp pull the head was torn through the bowel wall; the purse-string suture was immediately tightened and tied, and the abdomen was then closed.

The child made an uninterrupted recovery and was discharged from hospital thirteen days later.

Should I ever be called upon to perform this operation again, I should make the incision at least 1½ to 2 inches proximal to the pylorus, because in suturing the wound of the stomach the pyloric sphincter was encroached upon, tending to occlude the lumen. Nevertheless, it has been my experience that in cases of perforated pyloric ulcer treated simply by purse-string suture and invagination, however much is taken up in the suture and invaginated, pyloric obstruction does not occur, and gastro-enterostomy is quite an unnecessary procedure.

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### PASSAGE OF GALL-STONES THROUGH THE ABDOMINAL WALL.

THE case described by Mr. F. H. McCay in the *Journal* of July 26th (p. 142), of the natural passage of gall-stones through an external sinus, prompts me to record a somewhat similar, though perhaps even more uncommon, occurrence in a patient seen recently at the Manchester Royal Infirmary.

A woman, aged 60, gave a six months' history of gradually increasing jaundice and loss of weight, with clay-coloured stools, dark urine, anorexia, and occasional vomiting, preceded by repeated attacks of typical gall-stone colic, and extending over a period of twenty-four years. She stated that during this time she had passed through her abdominal wall at intervals thirty-four stones of varying dimensions, but usually of the size of small pebbles. They appeared singly, or in groups of two or three. Their passage was preceded by the formation of a small swelling under the skin, which, when fomented, discharged the stones externally, leaving the sinus exuding a thick yellow fluid.

Abdominal examination revealed the scars of three sinuses, one in the epigastrium and two in the right hypochondrium. A large mass present in the latter region was subsequently diagnosed at operation as an inoperable carcinoma of the gall-bladder, this finding being later verified histologically.

I am indebted to Mr. P. R. Wrigley for permission to record this case.

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# Reviews.

## AN INTRODUCTION TO THERAPEUTICS.

IT is a matter of common knowledge that students in our teaching hospitals are well and systematically taught the modern methods of diagnosis by lectures as well as in the wards, but, when they graduate, their idea of how to treat a sick patient is very rudimentary. Dr. Campbell's new *Handbook of Therapeutics*[1] is meant to rectify, as far as possible, this gap in knowledge, and certainly there has been no good short textbook on treatment available to our students for a number of years. Materia medica and pharmacology were formerly taught by practising physicians, and Dr. Campbell was fortunate in having the physician and pharmacologist, Professor Ralph Stockman, as his teacher. Of him Campbell states that "he has had no direct responsibility for any of the contents of this book, but its pages inevitably reflect his teaching."

Nowadays, especially in the medical schools of Great Britain, pharmacology has to a large extent simply become a special branch of physiology, devoted to animal experiment, while pharmacy and materia medica are seldom taken seriously as a study. A further handicap to the student is the necessity of using standardized mixtures and prescriptions in order to save the dispenser's time; thus little opportunity is given for learning the art of correct prescribing. Professor A. J. Clark's treatise, *Applied Pharmacology*, was a fine attempt to bring the results of pharmacological experiment into direct relation with therapy, but his book does not bear directly on the individual patient. Dr. Campbell is a physician and, obviously, is constantly making use of and testing the effects of the therapeutic measures which he recommends. His book may be used as a short reference in the treatment of individual cases, but larger and more detailed books or monographs would sooner or later be required. Its main value is that it gives a systematic survey of the therapeutic methods which the student, with his naturally limited survey of cases in his three clinical years, only picks up spasmodically and in scraps. It is an excellent book for every medical student to read in his final year, while no better present could be made to a young graduate about to take up the post of house-physician, or to begin as an assistant in general practice. It is essentially a student's book, and not an advanced book. It fills a real want, and at the moderate price of 12s. 6d. should command a ready sale in all medical schools. It would be an excellent thing if this book became well known, not only in this country but in the United States, where such a view of medical therapeutics is much required.

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## MYCOSES OF THE SPLEEN.

THE suggestion put forward by Dr. A. G. GIBSON sixteen years ago, that certain forms of splenomegaly are caused by a streptothrix, has not been generally accepted. Subsequent study of the subject has confirmed Dr. Gibson in his original opinion, and in a recently published work, *The Mycoses of the Spleen*,[2] he has given an impartial review of the question, and has made out a strong case in support of his thesis.

The splenomegalies under discussion are those occurring in cases of splenic anaemia, acholuric jaundice, and Banti's disease. As is well known, these spleens often contain small dark nodules of the size of a lentil or less, presenting a pale centre with a haemorrhagic peripheral zone. They are known as Gandy-Gamna nodules. From Dr. Gibson's descriptions and figures there can be no doubt that the nodules sometimes contain a streptothrix, and he has demonstrated its presence in nine out of thirteen cases of splenic anaemia, in ten out of thirteen cases of Banti's disease, and in five out of six cases of acholuric jaundice. Excluding three doubtful cases of syphilitic splenomegaly, the author has not been able to find nodules in other splenomegalies. Other investigators, however, are said to have found them in cases of atrophic cirrhosis, haemolytic icterus, calculous cirrhosis, lymphatic leukaemia, and Still's disease; but their much more frequent occurrence in the three splenomegalies under discussion appears to admit of no doubt. Dr. Gibson has succeeded in isolating the streptothrix in pure culture, and finds that it belongs to the genus Nocardia, an organism composed of mycelial hyphae with a radial habit of growth, showing true branching, and tending to develop into colonies made up of these hyphae, some of which may have conidia attached; all strains conform to the old genus Actinomyces. Experimental injection of the organism has shown it to be non-pathogenic for guinea-pigs, rats, and mice, but pathogenic for monkeys. In the latter case it produces a slow illness, the average length being 342 days, ending in death. The symptoms are a gradual deterioration in bodily activity without loss of appetite, tenderness in the splenic region with or without enlargement of the spleen, slight anaemia, and no recognizable fragility of the red blood corpuscles. Neither in the spleen nor in other organs has it been possible to demonstrate the presence of streptothrix threads, but in six out of seventeen cases the identical organism was recovered either from a blood culture during life or from the blood or spleen after death.

Dr. Gibson observes that the etiology of these splenomegalies can only be proved by the repetition of his observations by other workers; no positive opinion can be formed until the findings become general and uniform. Extensive investigations on this subject have recently been undertaken by Professor Nanta, who has demonstrated the presence of what appears to be an Aspergillus in the nodules; it is possible, therefore, that certain cases of splenomegaly are due to invasion by this organism.

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## THE PLATING OF BONE.

ELEVEN dogs were experimented upon by Dr. ROBERT FRANTZ to test the effects of metallic osteosynthesis by means of plates, etc., on unbroken and on broken bones.[3] This research was carried out in the laboratory of experimental surgery founded by Professor Bernard Cunéo in the École Pratique of the Faculty of Medicine of Paris. Professor Cunéo writes an appreciative preface. The operations performed and the changes found after killing the animals many days after operation are described in full detail, but no very revolutionary conclusions are set forth. Dr. Frantz points out that undue pressure on the bone is to be avoided, and that this may be effected by two methods: (*a*) reduction of force of constriction, and (*b*) increase of the surface of the restraining medium. Of the appliances tried, the staples and wires of Cunéo affect the least and the sleeve of Contremoulins the greatest surface. The fitting of appliances should not require unusual technical skill. In case of intolerance, reaction is most marked when the volume of the foreign body is considerable; therefore the less the bulk of the plate or staple or other object the better.

After describing and discussing these experimental operations on dogs, Dr. Frantz goes on to consider their application to human surgery. His conclusions appear to us sound. He points out the paradox, that the functional results of open operation and "plating" may be poor although the anatomical position and the union may be ideal. At the same time, one sees cases of fracture treated by non-operative methods in which the anatomical "end-to-end" results are poor, but the functionals are excellent. He concludes, wisely, that if one can obtain consolidation of a fracture, with restoration of the axis of the limb without cutting operation, this method should be preferred, and metallic osteosynthesis be strictly reserved for fractures of which the cure is impossible by other means.

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[1] *Handbook of Therapeutics.* By David Campbell, *M.C.*, B.Sc., M.D. Edinburgh: E. and S. Livingstone. 1930. (Cr. 8vo, pp. xviii + 411; 72 figures. 12s. 6d. net.)

[2] *The Mycoses of the Spleen.* By Alexander George Gibson, M.D., F.R.C.P. The Anglo-French Library of Medical and Biological Science. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1930. (5½ × 8¼, pp. xii + 169; 15 figures. 12s. 6d. net.)

[3] *L'Ostéo-synthèse Métallique dans les Fractures Diaphysaires.* Par Robert Frantz. Préface du Professeur Bernard Cunéo. Paris: Masson et Cie. 1929. (6½ × 10, pp. vi + 190; 34 figures. 35 fr.)

## PHYSICAL ANTHROPOLOGY.

ANTHROPOLOGY, as we understand it to-day, is a composite science, and it requires a combination of experts in various biological subjects to cover its entire field. Physical anthropology is one branch of this science and, broadly speaking, deals with the anatomy of the Hominidae. It is fit and proper, therefore, that this subject should be in the hands of the specialist in human and primate anatomy. But it is equally fit and proper that the general anthropologist with no training in anatomical science should cultivate at least a superficial acquaintance with the main points of physical anthropology, so that he may rightly appreciate the significance of anatomical factors in their relation to human evolution, even though he may not himself be competent to interpret them. Mr. E. P. STIBBE's book, *An Introduction to Physical Anthropology*,[4] serves to meet the need of those would-be anthropologists who have no first-hand knowledge of human anatomy. It is based primarily on the syllabus for the B.A. and B.Sc. degrees in anthropology of the London University.

The main feature of the book, we think, is that it reduces the whole of physical anthropology to its simplest expression and thus provides for the novice a clear and concise survey of the subject. As is customary in works of this kind, a very large proportion (almost half) of it is taken up with osteology, presumably because of its importance in connexion with the study of fossil remains. Unhappily, however, this has the disadvantage of dissociating in the mind of the amateur the skeleton from the "soft parts" and of suggesting that it is possible to assess the significance of skeletal characters without an intimate knowledge of anatomy as a whole. Nothing could be more misleading, and, indeed, the results of such an attitude of mind have more than once been illustrated by the unfortunate reconstructions of fossil man which have been put forward by scientists who have never so much as dissected a human body. For this reason we are sorry that Mr. Stibbe has not dealt with the anatomy of the "soft parts" except for a brief reference to the evolution of the brain and to surface anatomy. Perhaps, however, such a criticism is not of so much importance in connexion with a textbook which does not purport to be more than an introduction.

The first part of the book deals mainly with the skeletal structure of man and the man-like apes, and this part has been arranged in a somewhat unusual manner. The left-hand pages, read in continuity, give a description of the human skeleton, and the corresponding parts of the apes are placed opposite on the right-hand pages. We confess we are not enamoured of this arrangement. To our mind, it is more difficult to read in continuity thus, and it might even be construed as a reflection upon the mental powers of the reader that such a tabulation should be necessary in an elementary book of this kind. Part II deals with the anatomy of fossil man, and the value of the short descriptions is considerably enhanced by a series of excellent illustrations. Part III deals with racial anatomy, and contains a clear account of the methods adopted for the examination of the living subject and of the skull.

A work of this type has been badly needed for a long time, and, if it errs on the side of brevity, Mr. Stibbe's book certainly provides a most convenient summary of present knowledge and methods of physical anthropology.

## THE COTTAGE HOSPITAL.

WHATEVER fate the future may hold for the hospital system in this country under the new Local Government Act, it is possible that the authors of a recently published book on cottage hospitals[5] are right in their surmise that these institutions will remain, as at present, voluntary hospitals. They think, in fact, that their numbers will increase until every rural district possesses its cottage hospital. Inspired by this ideal, Major DU-PLAT-TAYLOR, Mr. JOHN COLERIDGE, and Mr. JOHNSTON ABRAHAM have combined their efforts, as engineer, architect, and surgeon, in order to instruct committees of the charitable in the construction and administration of suitable buildings. It is perhaps a pity that the authors did not subdivide their subject so as to show not only what should be done in areas where wealthy subscribers are numerous, but also what could be done in sparsely inhabited poor districts. Their account of what a cottage hospital should be is admirable; but if a network of these institutions is to be established throughout the country on a voluntary basis, charitable committees might well be frightened at the cost of some of the equipment described as essential. In the authors' view cottage hospitals are primarily surgical hospitals, and "the theatre of a cottage hospital should be as well planned and equipped as any of those found in a large London teaching hospital." They base this view on the ground that it is often impossible to move surgical cases to a general or special hospital, so that all equipment for major operations and a high standard of surgery are alike necessary. They seem to think that if the latter requisite is missing locally, it should be obtainable from the surgeons of any neighbouring town, one of whom may chance to have a country house in the neighbourhood. It is possible, however, to suggest that the argument derived from the ease with which the motor car can transfer the surgeon to the cottage hospital may be used in the opposite direction. In most cases, probably, but little extra time would be lost in transferring the patient by ambulance to the general hospital, where efficiency due to frequent practice would outweigh the value of high-class cottage hospital equipment which might be rarely used. While, therefore, we may admire the authors' enthusiasm in setting before cottage hospital committees a high standard for their institutions, it may be that in many cases the standard is higher than the circumstances would warrant. It is true that among the plans appended to the book there is a simple one designed, apparently, for a maximum of twelve beds; but the letterpress seems to us to call too little attention to institutions of this size, which are probably more appropriate in most areas in this country. In the scheme for hospital services put forward in the Dawson Report some ten years ago cottage hospitals formed an integral part. Their function must surely be to serve the medical and obstetric needs of the district no less than the surgical. The only excuse for over-emphasis of the surgical aspect must be sought probably in the enormous increase of road accidents. The authors have found space in their small book to express their views on the financial solution of this problem; they have also managed to include the greater part of a speech made at a hospital dinner, as a model for chairmen in the art of extracting money from the charitable. Apart from these fringes of thought of doubtful or debatable value, the book is an excellent exposition of the way in which a cottage hospital with wealthy subscribers should be constructed, equipped, administered, and maintained.

## NOTES ON BOOKS.

THE scrupulous thoroughness of the American textbook seems likely not only to detract from the interest of the subject, but also to quell the spirit of adventure in the reader. There is an atmosphere of awe-inspiring efficiency about Miss GLADYS SELLEW's book, *Ward Administration*.[6] The duties of the head nurse and the "placement of the floor duty nurses" are minutely defined. Time studies are made of the total number of minutes required in the daily routine for every variety of duty, from passing bedpans to giving Sherman's vaccine hypodermically; and from these time studies the number of nurses required to staff a ward is calculated. Everything is defined: the responsibility of the supervisor, the essential qualities of supervision, and the nature of work. Algebraic formulae are given for ascertaining the cost per hour of a nursing service. Standardization, co-operation, and other blessed words appear at intervals; and the efficiency expected in the nurse is shown by the statement that every nursing student should learn how to assist the doctor when he is taking blood for a Wassermann from the longitudinal sinus of an infant. But Miss Sellew's book

[4] *An Introduction to Physical Anthropology.* By E. P. Stibbe, F.R.C.S. London: E. Arnold and Co. 1930. (Demy 8vo, pp. vii + 199; 42 figures, 1 map. 12s. 6d. net.)

[5] *Cottage Hospitals.* By Major S. Du-Plat-Taylor, M.Inst.C.E., M.I. Mech.E., John Coleridge, F.R.I.B.A., and J. Johnston Abraham, C.B.E., D.S.O., M.D., F.R.C.S. London: E. Benn, Ltd. 1930. (Cr. 4to, pp. 103; 22 figures. 12s. 6d. net.)

[6] *A Text-Book of Ward Administration.* By Gladys Sellew, B.S., R.N. Philadelphia and London: W. B. Saunders Company. 1930. (5¼ × 8, pp. 290; illustrated. 12s. 6d. net.)

is worthy of perusal, partly for the light it throws on the American attitude towards organization, partly because, even if the vision of such efficiency seems blinding to our eyes, a judicious blending of methods and points of view may not be without value.

By the time a book has reached its twenty-fourth edition all a reviewer usually has to do is to record this fact, but in the case of the manual by Dr. OTTO SEIFERT and Dr. FRIEDRICH MUELLER on *Physical and Clinical Diagnosis*[7] these previous editions have been in German, and for the first time it is available in English, thanks to the work of Dr. E. COWLES ANDRUS. This authorized translation has been adapted, mostly by means of clearly marked additions, for the American student and physician, and the slim volume of over 500 pages contains a mass of information on all varieties of physical diagnosis. Illustrations are throughout good and the colour plates excellent, particularly of the blood. The letterpress is most difficult to criticize from the English standpoint. A third-year student confronted with this book in this country would get stuck very early in his attempts to read it through, and the fluency of a comparable book, such as "Hutchison and Hunter" (late Rainy), is strikingly absent. There is no hint anywhere that the patient has a mind as well as a body, and the few pages dealing with children are quite inadequate. Dr. G. E. Fahr commends this work to medical students and practitioners in an introductory note.

In *The Nature of Life*[8] Dr. EUGENIO RIGNANO, professor of philosophy in the University of Milan, exposes the weak points in the mechanistic conception of life, for which physiologists are largely responsible, and in the animistic vitalism explanation, supported by psychologists, and proposes a solution intermediate between them—the vitalistico-energetic conception. In the first part, which occupies about two-thirds of the book, the purposiveness of vital phenomena is established, and part two contains the arguments for the above-mentioned hypothesis as to the nature of life, which the author has previously put forward in books on the inheritance of acquired characters and on biological memory. The universe as a whole is not, he believes, teleological, but that part of the universe constituted by life is alone animated by a particular form of energy which imbues with purposiveness every one of its manifestations.

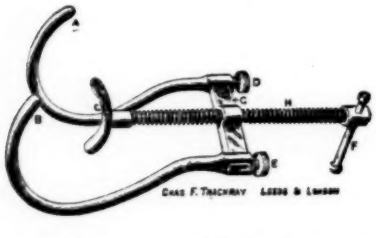
[7] *Manual of Physical and Clinical Diagnosis.* By Dr. Otto Seifert and Dr. Friedrich Mueller. Authorized translation from the twenty-fourth German edition by E. Cowles Andrus, M.D. London: J. B. Lippincott and Co. 1930. (Cr. 8vo, pp. xi + 543; 140 figures, 4 plates. 25s. net.)

[8] *The Nature of Life.* By Eugenio Rignano. Translated by N. Mallinson. International Library of Psychology, Philosophy, and Scientific Method. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1930. (Demy 8vo, pp. x + 168; 7s. 6d. net.)

## PREPARATIONS AND APPLIANCES.

### OSTEOCLAST WITH SCREW CONTROL.

MR. ALEXANDER MACLENNAN (Glasgow) writes: The accompanying figure illustrates an osteoclast made for me by Messrs. Thackray, Leeds. The pattern is founded on the ordinary steel rail bender. I have had the instrument in use for a considerable time, and am satisfied with its performance. In attempting to straighten deformed bones, to move stiff joints, or to correct such a condition as talipes, manual efforts are futile and exhausting, as so much energy is dissipated in controlling the corrective force. With the screw adjustment (H) the amount of force available is very great, and yet is absolutely under control—a feature entirely absent from the lever osteoclast in general use. To minimize injury to the tissues the resisting arms (A and B) and the plunger (C) are encased in thick rubber tubing (sponge rubber, wool, etc., may be used to supplement the rubber when required). I have found that with the employment of even considerable force less damage to the soft parts results if the pressure in only applied for a short time. As the control is so perfect the necessary pressure may be rapidly applied, and once its action has been achieved the tension may be removed by unwinding the screw. A detailed description of the apparatus is obviated by the diagram. The arms (A and B) are adjustable on the bar (G) by the screws (D and E) so that curves of various diameter may be treated. The bar (F) slides in its sockets, so that extra leverage may be applied to the screwed plunger (H).




# The Sections.

## SUMMARY OF PROCEEDINGS.

*(Continued from page 434.)*

## SECTION OF MEDICINE.

*Thursday, August 28th.*

### FUNCTIONAL DISORDERS OF THE COLON.

THE meeting was opened by the President, Lord DAWSON OF PENN, who called upon Dr. EDMUND SPRIGGS (Ruthin Castle) to introduce the discussion on functional disorders of the colon. Dr. Spriggs said that the colon had been abandoned by Metchnikoff as a useless relic, stormed by half a generation of enterprising surgeons who removed large pieces, or, when most merciful, stitched it in its presumed place, laved with many waters by physicians, and dosed by the public; it had been and still was a battlefield, with long-drawn-out onslaughts and retreats, the Flanders of Medicine. It was indeed fortunate that the large bowel, though easily injured by wrong habits and treatment, had great powers of recovery. In 4,000 cases under Dr. Spriggs's care a note concerning the colon was made in 2,086. During his discussion he eliminated all the organic lesions from the group. The functional groups were classified as colonic delay, irritable colon, mucomembranous colitis, and mucous colitis. Coloptosis was not considered important so long as the colon passed on its contents normally. An outline of the etiology and pathology, together with an analysis of the symptoms, signs, and radiological and sigmoidoscopic appearances, in 242 cases was given. Treatment was fully discussed. It was considered essential to allay anxiety, abolish purges, and regulate the patient's habits and life. Surgery had no part in the treatment of these conditions.

The discussion of Dr. Spriggs's paper was opened by Dr. E. E. CLEAVER (Toronto), who presented a masterly analysis of the physiological and anatomical facts about the colon known at the present day. He was followed by Dr. THOMAS MCCRAE (Philadelphia), who stressed the condition of the nervous system in these cases. This, together with the abuse of laxatives, constituted most important etiological factors. He drew attention to the popular misconceptions about constipation which were fostered by the press, by advertisements, and by misguided physicians. There had sprung up in America a new fad in the form of hydrotherapy, and institutes devoted to colonic irrigation were patronized by well-to-do, idle people. It was necessary, however, to be careful to exclude all possible causes in these cases, and not to forget the reflex disturbances of colonic function brought on by lesions elsewhere, not the least important of which was chronic prostatitis. The less said about surgery the better in these cases. Dr. HUGH BARBER (London) discussed the evils of roughage diet and purgatives in constipation. It was, he hoped, the medical profession's business to diagnose constipation and not the patient's. The colon was not meant to be completely empty. That "dangerous" condition, mucous colitis with spastic colon, which caused pain in the right lower abdomen, was often diagnosed by the patient as chronic appendicitis. A full investigation was the first step towards recovery. Professor T. G. MOORHEAD (Dublin) agreed with Dr. Spriggs that the position of the colon was of little importance, provided it sent on its contents. It was, he felt, a great mistake to label a case as "dropped colon." The psychic effects of such a diagnosis were very serious indeed, and it was very difficult to convince the patient that the condition was of no account. Dr. Moorhead also entered a protest against the very handsome abdominal belts so often provided by the surgeon. These belts, of course, were of great value in cases of real ptosis, but not for the "abdomen conscious" patient. He felt that purgatives did a great deal of harm, especially in the more nervous type of individual. There were, however, people who could tolerate daily purgatives for years without great difficulty. He felt constrained to point out that the purgative was a most useful blessing to the out-patient physician, adding

that he had a short time before been asked to sign an order for his hospital for 55,000 laxative pills for use in the out-patient department. Professor WILLIAM WRIGHT (London) stated that the action of the colon was essentially reflex, but that there undoubtedly was a conscious control as well. As an example he quoted Maudsley, who had described a patient who could voluntarily procure an action of the bowels at ten minutes' notice. Since the lower portion of the large intestine was under control of the pelvis, sympathetic reflex disturbances from prostatitis, etc., were indeed a possibility. The rectal valves might well be potent sources of trouble in rectal stasis, and abnormalities in the ampulla were another cause of trouble.

Lord DAWSON spoke in appreciation of Dr. Spriggs's paper and of the able and interesting discussion which had followed. He felt that there was some justification in labelling these conditions for the benefit of the public which could not wholly understand the technical explanations which must always be given to the patient. He felt that colitis was in many instances a colonic expression of deranged function elsewhere. He described the spare, highly strung, nervous individuals with flat abdomens, who were most often the victims of this malady. These people were abdomen-conscious. He contrasted these people with the vigorous, plethoric individuals, who were the victims of high blood pressure. In his opinion these people more commonly had low blood pressures. The strain of modern life was concentrated in their abdomens; one of the chief exciting causes was mental stress. These were the days of increasing speed, and the rate of progress was outstripping the power of accommodation in these people. They were often conscientious souls with a high sense of duty. The chief thing to do was to bring the abdomen out of their realm of consciousness. Anxiety was often a factor. He stressed the importance of fatigue and cold. They often ate when they were cold and tired and very hungry. He felt that to give these people a detailed diet was to make them more conscious of their abdomens. Dr. KEATING (Chicago) discussed the history of constipation, and in humorous vein condemned the indiscriminate use of laxatives and pills. Dr. SPRIGGS, in reply, said he had noticed that left sciatica and herpes were commoner in disorders of the sigmoid flexure. He agreed with Lord Dawson that the blood pressure was low in these conditions. In his series the average age had been 45 and the average blood pressure 128/77. He felt that one of the causes of flatulence might be the pump-like contraction of the bowel, which emptied the veins and thus prevented abortion. He had found arsenic useful in small doses and continued for three weeks.

### SEA-SICKNESS.

An interesting series of papers on sea-sickness was given by Dr. T. GWYNNE MAITLAND (Liverpool), Group-Captain FLACK, and Dr. J. R. MARRACK. Dr. Maitland said that all the evidence—experimental, clinical, and empirical—led to the inevitable conclusion that though there were contributory factors—ocular, visceral, and metabolic—the underlying cause of sea-sickness was vestibular. The subject of sea-sickness presented more than usual difficulty owing to the fact that its inception was not a morbid process; it was merely an over-excitation, though eventually it might indirectly exhibit morbid features, through what was called irradiation. The vestibule was equipped to respond effectively only to short and abrupt kinetic changes of posture, and it would fail not only to register correctly any movement beyond this, but such movement would, if carried too far, result in the symptom-complex of sea-sickness. An interesting observation on the semicircular canals was that, while they represented in different measure every plane of movement, they were very differently susceptible, and it was for this reason that the majority of human beings tolerated very badly postural movement imposed from without in the vertical planes.

With rare exceptions they bore without noticeable distress movement in the horizontal plane as in waltzing and merry-go-rounds. There was the strongest possible presumption that this difference in susceptibility was due to education and habituation. There was considerable evidence that a certain immunity could be developed against movement in the vertical planes—for example, in sailors, in lift attendants, and in the amusement park habitués. Lacking training in these directions the intending sea voyager was often compelled to resort to prophylactic measures and to remedies when symptoms actually appeared. It was here that the greatest care had to be exercised to decide on the remedy; in no case should a subject take for granted the absurd claims made for some of the proprietary drugs and remedies. In bad cases his reactions should be the subject for most careful study—only then would the appropriate remedy be indicated and real relief obtained.

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## SECTION OF SURGERY.

*Thursday, August 28th.*

### USES OF RADIUM IN SURGERY.

ON the second day of the meeting the Section of Surgery held a symposium on the uses of radium in surgery. With one exception the contributors were British workers, and the discussion as a whole gave an adequate presentation of the recent work on radium in this country. It was the more to be regretted, therefore, that no one was present who could give an account of radium treatment of cancer of the breast.

The discussion was opened by Sir CHARLES GORDON-WATSON (London), who reported his recent work on the treatment of carcinoma of the rectum. One of the great advantages offered by radium was the possibility of curing the disease without recourse to the colostomy that was inevitable during some stage of treatment when present-day surgical methods were employed. The problem of radium *versus* surgery, however, was complicated by the recent work of Cuthbert Dukes on the spread of cancer of the rectum. This work suggested that it was not necessary to excise the rectum completely in order to obtain thorough eradication of an early carcinoma which had not penetrated the wall of the rectum. If this work was substantiated it might be possible in the future to obtain a cure by more limited operations than were at present used, and without recourse to permanent colostomy. There was no doubt, Sir Charles said, that an early growth of the rectum could be destroyed by radium, without colostomy and without disturbance of the function of the rectum, but no observations were as yet available on a five-year basis. The speaker had treated 121 cases of carcinoma of the rectum with radium. Small growths could be destroyed with little or no resulting deformity of the rectum. The adenocarcinomas varied greatly in their radio-sensitivity, and it was desirable that attempts should be made to grade tumours histologically, and to correlate such findings with the radio-sensitivity of the tumour. Unexpected failure had been encountered in the radiation of early growths, but fortunately these failures could be made good by surgery. Rapidly growing adenocarcinomas in young people were more radio-sensitive than slow-growing tumours in elderly patients. In these the dose of radium required to secure complete retrogression of the tumour was very near the margin of tolerance of healthy tissues, and consequently radium burns were difficult to avoid. Beta-radiation should be reduced to a minimum. The speaker had used filtrations of 0.5 or 0.6 mm. of platinum, but in the future he intended to increase this filtration to 0.8 mm. He left the needles in the tumour for ten days. Radium was preferred to radon, because of its uniform intensity of irradiation. For tumours of the perineal portion of the rectum the results so far obtained were too uncertain to justify the preference of radium to surgery in the operable type of case. Carcinomas of the rectum that lay above the peritoneal reflexion were treated by radium when the tumour was fixed, or when, in operable tumours, the age or state of health of the patient forbade an abdomino-perineal excision. Transperitoneal radiation was essential in these cases, and it was a more risky procedure than perineal radiation, for there was danger of infection and consequent paralytic ileus or general peritonitis. Radon seeds were less dangerous than radium needles inside the peritoneal cavity, but so far the end-results when radon was used were not encouraging. Radon

or radium was also used inside the peritoneum for barrage treatment of the mesenteric glands. The speaker mentioned one excellent result in which an inoperable tumour, fixed both to the bladder and to the sacrum, had been treated by radium needles, and the patient was alive and well, with a normally acting rectum, three years after treatment. In other cases great symptomatic improvement had followed the use of radium. Sir Charles then discussed squamous-celled carcinoma of the anus. This tumour responded much better than any of the others so far considered, and in early cases immediate initial cure could be obtained by radium. The consequent avoidance of colostomy rendered this method preferable to surgery. The various methods and routes by which radium could be applied to carcinomas of the rectum were then discussed, and the speaker closed with a plea for team work between the physician, surgeon, pathologist, biochemist, and physicist, to enable the radium worker to conduct his practice on a scientific rather than on an empirical basis. He also showed a film illustrating the implantation of radium needles into a rectal carcinoma by the perineal route.

Radium treatment of carcinoma of the mouth and tongue was the subject of the next three papers, by Mr. STANFORD CADE (London), Dr. DOUGLAS QUICK (New York), and Dr. G. E. BIRKETT (Manchester), whose paper was read by Professor BURGESS. In many respects there was remarkably close agreement between these three workers, and as a result there emerged a fairly authoritative declaration on the radium treatment of buccal carcinoma. For treatment of the primary growth all were agreed on the advantages of radiation over surgery, but whereas Mr. Cade and Dr. Birkett favoured radium needles, Dr. Quick preferred radon seeds. In the opinion of the first two speakers it was difficult with seeds to obtain a uniform intensity of radiation, not only because the intensity of the radiation rapidly diminished within a period of four days, but also because the small seeds could not be so accurately placed as the larger needles. Carcinoma of the posterior part of the tongue, especially in or near the vallecula and the lingual tonsil, was much more radiosensitive than the more differentiated carcinoma of the anterior part of the tongue, but it was prone to give rise to early metastases. For the treatment of metastases of the neck that were operable, all the speakers favoured free surgical excision on the lines laid down by Crile. They stressed the importance of very radical removal, and urged that the operation should be carried out only by those who were specially trained and practised in the performance of this operation. An incomplete dissection of the neck was worse than useless. When there were large inoperable metastases the glands should be actively treated by radium needles in large doses, and the balance of opinion favoured open operation as the method by which this treatment should be carried out. For early cases in which no palpable metastases could be found there was sharp divergence of opinion as to the treatment of the neck. Dr. Birkett advocated a waiting policy, provided the patient reported for examination once a month. Mr. Cade and Dr. Quick, on the other hand, believed that the neck should never go untreated. Mr. Cade advocated needling of the neck by the closed method, or, as an alternative, external treatment by means of a radium collar. Dr. Quick employed heavily filtered high-voltage *x*-radiation, and more recently a four-grain radium element pack. Speaking of the radium bomb at the Westminster Hospital, Mr. Cade felt that it was too early to form a judgement of its value, but he did feel that it was not an economic method of using radium, for the same amount of radium in the form of needles would treat ten patients where only one could be treated by the bomb. Dr. Quick stressed the importance of cleaning the mouth before treatment of the neoplasm was begun, and as a preliminary to irradiation of the primary tumour he recommended external irradiation of the neck and the site of the primary growth for a period of two weeks. The results of treatment reported by the speakers cannot be adequately reported in abstract, but the impression formed was that radium gave results that were definitely better than those of surgery alone, especially when it was remembered that healing was attained with no impairment of speaking, eating, or drinking. Dr. Birkett made a strong plea for the concentration of radium treatment at large centres.

Mr. FRANK KIDD (London) reported the results of treatment of 32 cases of carcinoma of the bladder by radon seeds after preparatory diathermy. In some cases the treatment was administered by open operation, in others by the cystoscope. Sixteen of the patients were alive and well for periods up to eight years, and two others were still living, but showed evidence of recurrence. In some of the fatal cases the use of radon had appeared to accelerate the course of the disease. It was sometimes difficult to estimate accurately the extent of the tumour, even at open operation, and the results were still not predictable with any certainty. There had been some very encouraging results, and further work along these lines was indicated.

Mr. HUGH CAIRNS (London) reported on work done during the last three years in the use of radium in the central nervous system. For a variety of reasons it was highly desirable that radium should be given an extensive trial in the treatment of malignant intracranial tumours. These tumours were unlike most of those hitherto treated by this method, as they did not give rise to systemic metastases. The greatest problem of the neuro-surgeon in doing radical extirpations of infiltrating intracranial tumours was to avoid maiming the patient by removing healthy nervous tissue. If radium could be shown to have a selective action on malignant gliomas, a great advance would be achieved in the treatment of these tumours. Results so far observed gave evidence that in certain types of tumour radium had a destructive effect. It was too early as yet to pronounce on the results of radium treatment in this field. In assessing the results it was necessary to distinguish clearly between the symptomatic improvement that followed relief of hydrocephalus and that which was actually due to destruction of tumour tissue. The methods of using radium and radon in intracranial tumours were briefly described. Mr. CLIFFORD MORSON (London) discussed the radium treatment of malignant diseases of the genito-urinary tract. By far the most favourable of all these neoplasms was carcinoma of the penis. He had treated seven cases of this disease with radium, and had had six successful results. The one failure had been due to pyogenic infection.

Throughout the meeting emphasis was laid on the view that radium should not be regarded as a panacea for cancer. The whole discussion was conducted in a critical spirit. It was evident that much more work was necessary in all fields before the position of radium in treatment could be properly assessed, but the general attitude was one of cautious optimism.

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## SECTION OF OBSTETRICS AND GYNAECOLOGY.

*Thursday, August 28th.*

### ALBUMINURIA OF PREGNANCY.

AN exceptionally large number of members and visitors, under the chairmanship of Professor D. S. MACKAY (Winnipeg), heard Mr. J. BRIGHT BANNISTER (London) open the discussion on the commonest abnormality in pregnancy and labour and its late results. In a series of 6,000 cases of pregnancy which he had investigated he found that some 30 per cent. suffered from albuminuria, the majority being transient only. He pointed out the difficulties met with in following out the after-histories; it was because records were incomplete that so little was known on the subject. All investigations should cover a period of at least five years, and the collaboration of a general physician should always be obtained in treating a case of albuminuria of pregnancy after delivery if dire consequences were to be eliminated. Cases might be classified, as suggested by Dr. Standen, into: (1) those in which albuminuria existed with vomiting in pregnancy; (2) cases with a low kidney reserve; (3) cases of frank nephritis complicating pregnancy; (4) cases of pre-eclampsia; (5) eclampsia. In approaching the subject the lecturer set himself several questions. Was a patient who developed albuminuria likely to suffer from a recurrent

attack in a subsequent pregnancy? Was a patient with chronic nephritis likely to suffer from progressive deterioration of kidney function during a future pregnancy? Did eclampsia recur? What place did albuminuria of pregnancy occupy in the etiology of chronic nephritis? He investigated the records of 30,000 cases of pregnancy in various London hospitals, and found 1,700 of them required some treatment during the pregnancy, and in 86 per cent. of these albuminuria recurred more or less severely in subsequent pregnancies. The conditions from which these patients suffered were too varied to permit of precise conclusions, but he had arrived at certain general answers to the questions set. He did not believe that a patient developing albuminuria in one pregnancy was particularly liable to a similar complication in a subsequent gestation if she belonged to the low kidney reserve group. Cases of chronic nephritis would have the condition aggravated by a subsequent pregnancy. He thought that some 30 per cent. of cases of pre-eclampsia and eclampsia suffered from some toxic condition in a subsequent pregnancy. He considered that the shorter the time the albuminuria persisted the less was the risk of the complication in a subsequent pregnancy. Raised blood pressure was the most significant clinical sign. In cases in which the blood pressure was up to 150 for any length of time the damage was probably permanent, and there was likely to be trouble in a subsequent pregnancy. In considering how future recurrences might be prevented Mr. Bannister stressed early diagnosis and early and thorough energetic treatment. This treatment should not be carried on medicinally for too long, and should recovery not occur in about seven days then radical treatment should be chosen. He felt that Caesarean section might have a place in the treatment of the severe toxaemias of recent origin. He mentioned the frequency of mental symptoms in albuminuria, and concluded by stating that in the light of present knowledge it was impossible to state what was the part played by albuminuria of pregnancy in the etiology of chronic nephritis.

Professor O. BJORNSSON (Winnipeg) was in agreement with most of the points mentioned, and particularly with reference to the evil results of delaying the induction of labour or institution of therapeutic abortion. He regretted that Mr. Bannister had not outlined his treatment in these cases. Dr. J. HOLLENBERG (Winnipeg) asked the opener about his experience of the value of Stroganoff's treatment in albuminuria of pregnancy. Mr. ERIC STACEY (Sheffield) discussed cases of albuminuria of pregnancy associated with some form of ante-partum haemorrhage. In the term "toxic haemorrhagic states" he included cases of accidental haemorrhage with or without albuminuria in which there were evidences of a toxaemic state often expressed only by high blood pressure; and cases of what he called toxic placenta praevia. By the latter term he referred to those cases which, while inevitably bleeding from the abnormally situated placenta, showed signs of a toxic state by oedema, albuminuria, high blood pressure, and other symptoms of pre-eclampsia. In a follow-up of a series of roughly 500 of these cases he had found that toxic conditions occurred in 37 per cent. of the patients who had a subsequent pregnancy. He considered that the raised blood pressure was the most important danger sign rather than the albuminuria, and referred to the frequency of mental aberration in toxic pregnancies and the danger of recurrence if a future pregnancy had an associated albuminuria. He disagreed with Mr. Bannister about the short period of treatment he would allow before considering therapeutic abortion or induction, and felt that with a rigid rest and dietetic treatment many of the patients could be prevented from suffering permanent damage, except such as already existed, and at the same time have the satisfaction of delivering a living child. He asked Mr. Bannister to pronounce his views on this matter more definitely in case error had arisen.

Professor HILDING BERGLUND (Minnesota) pleaded for rather more conservative treatment than that advocated by the opener, and only induced when there was deterioration of the patient's condition or a persistence of the high blood pressure for six to seven weeks. He was struck by the fact that even when albuminuria could be eliminated by treatment on whatever lines, certain cases tended to persist, with nephritis subsequently, and ended fatally with uraemia from three to nine months later. On the other hand, he had known patients to carry on their vocation in life for thirty years with a progressive nephritis which had started with a pregnancy, and felt that repeated pregnancies in these conditions led to permanent damage to the kidneys. Dr. T. G. STEVENS (London) believed in early termination of pregnancy in cases of severe albuminuria, but felt that Caesarean section held no place in its treatment. Dr. MARGARET BASDEN (London), on the other hand, said she treated these cases for twenty-four hours medicinally, and, failing improvement, induced. If during that time the patient's condition became worse she always performed Caesarean section as better in the interests of the child, and she had not had a fatal case when exploiting this method of delivery.

The President, Mr. COMYNS BERKELEY, in the course of a historical review, said that Kellogg gave the name "recurrent toxaemias of pregnancy" to those cases which gave no clinical manifestations of chronic nephritis when not pregnant, and thought that 8 to 15 per cent. of pregnancy toxaemias belonged to this group. He thought that these might turn out to be cases of a faulty kidney balance which, when the load of pregnancy was added, developed kidney insufficiency. Stander and Beckham had described a group, called low reserve kidney, which appeared to be the same. Young believed, with Kellogg, that women with a toxaemic history had resident within their bodies some morbid influence, an $x$ factor, not inconsistent with good health in non-pregnant women, but inconsistent with the normal continuance of pregnancy to term because of placental damage, which he thought was the cause of eclampsia. He suggested that this $x$ factor might be of an infective nature—for example, chronic endometritis, metritis in primiparae. Gibberd did not agree with these views. He found that in 13 per cent. of patients who had had at least two pregnancies, all of whom had healthy kidneys, signs of renal damage persisted for a year or longer after the termination. These, therefore, had become chronic nephritics. The average time between the first appearance of albuminuria and the termination of pregnancy was nine weeks. In the remaining 41 cases there were 27 in whom the first albuminuric pregnancy was terminated within three weeks, and 14 in whom it was terminated later than three weeks. Of the first group 40 per cent., and of the second 70 per cent., had albuminuria in the next pregnancy, which suggested that the rate of recurrence could be related to the duration of the albuminuria. Mr. Comyns Berkeley believed that he had obtained evidence showing that in all cases in which toxaemia occurred in successive pregnancies there was a pre-existing chronic renal damage not detected by the ordinary methods of clinical examination.

Dr. S. KOBRINSKY (Winnipeg) thought that induction should not be resorted to too early, as many of the patients continued with the condition subsequently, and asked whether Mr. Bannister had tried treatment with magnesium sulphate. Mr. BANNISTER, in replying, wished to make it clear that he considered Caesarean section in these cases of albuminuria should be reserved for certain severe fulminating cases of pre-eclampsia only. He had no experience of the use of magnesium sulphate, but, having seen Stroganoff working, felt that if his treatment was carried out as done by him the results were excellent.

### HYPERTONIC SALINE IN PREGNANCY TOXAEMIA.

Professor V. J. HARDING (Toronto) then described experiments carried out by himself and Dr. H. B. VAN WYCK (Toronto) on the effects of hypertonic saline on toxaemias of later pregnancy. Four years had elapsed, he said, since they had described the use of salt-free diet in the treatment of pre-eclampsia, and since then they had reinforced their conclusions by observations on the use of sodium chloride intravenously. The object of the older methods of treatment—namely, water purging, venesection, hot packs—was to remove toxins, but at the same time they removed body fluid. The administration of hypertonic saline solutions might produce oedema in cases complicated by parenchymatous nephritis, but to relieve

convulsions and high blood pressure was considered worth while at the cost of a little oedema. In the speaker's view, valid though such arguments might sound, the use of hypertonic saline solutions in the toxaemias of later pregnancy was harmful, and he cited cases in which this treatment had undoubtedly aggravated toxaemia. Their observations contraindicated the use of hypertonic saline solutions in post-operative work in toxaemic pregnancy unless the pregnancy was to be simultaneously terminated. Their more recent observations had led them to conclude that a high intake of salt at the time of a developing toxaemia might rapidly produce fulminating eclampsia. Salt restriction was a necessary part of pre-natal care; protein was harmless. They conceived the toxaemias of later pregnancy as due to a fundamental disturbance of water distribution which might be associated with water retention. Such a disturbance might show itself as epigastric pain and vomiting, albuminuria, hypertension, oedema, convulsions, or peripheral liver degeneration, alone or in combination. Dame LOUISE MCILROY (London) said that here was a definite scientific pronouncement on what she had maintained from clinical experience—namely, that administration of intravenous saline where a toxic state existed was contraindicated; she relied on colonic lavage. She then showed two cinematograph films: (1) classical Caesarean section performed at the Royal Free Hospital, London; (2) method of resuscitation of the newborn in a case of asphyxia after forceps delivery, also at the Royal Free Hospital.

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## SECTION OF BACTERIOLOGY, PATHOLOGY, PHYSIOLOGY, AND BIOCHEMISTRY.

*Thursday, August 28th.*

### IMMUNOLOGICAL PROBLEMS IN SEPTICAEMIA.

PROFESSOR WILLIAM BOYD (Winnipeg), Vice-President of the Section, presided at the second session. Professor FRED T. CADHAM of the University of Manitoba opened a discussion on some immunological problems in septicaemia. His paper appears in full in this issue at page 460. Professor G. S. WILSON (London) expressed his diffidence in dealing with a subject of which he had had very little direct experience. He wished to know whether in the titration of complement allowance had been made for the natural sheep antihaemolysis, which is present in normal human serum, and which is known to show considerable variations even in health. In order to assess the significance of the difference in complementary titre between groups of normal and of diseased persons it would be of great value if Professor Cadham would publish his exact figures, so that the standard deviation of the difference between the means might be worked out. The evidence that a parallelism existed between the complementary titre and the degree of immunity was not very satisfactory, and the work of Gunn, particularly in relation to enteric fever, was by no means favourable to this conception. In severe, and often in fatal, cases of this disease, the complementary titre might be very much above normal, indicating that failure to establish immunity was not due to insufficient complement. Since complement was active only in association with immune bodies, it was clear that in order to obtain information of value, it would be necessary to determine both the complementary and the antibody titre of the serum. The little evidence we possessed in favour of the value of the antibacterial serums pointed to their action being specific, and it was noteworthy that the beneficial effect of antipneumococcal and antistreptococcal serum appeared to depend on the presence of precipitating and antitoxic antibodies respectively, neither of which required the co-operation of complement. Professor Cadham's results were very striking, but it was not clear that the explanation which he had put forward was able to account for the facts.

Professor OLIVER S. WAUGH dealt with the subject from the clinical point of view. While only one case of Cadham's series was his own patient, he had seen a large number of the series. To the surgeon an acute pyogenic infection was of grave importance, leading to apprehension; the methods previously available for combating such an infection had been largely empirical. Vaccines had not been beneficial in acute conditions, and chemotherapy and other treatments were disappointing or useless; 80–90 per cent. of such cases proved fatal. Professor Cadham would appear to have used the body as a human test tube to build up a lytic reaction against the invader. Some of the recoveries obtained in Winnipeg by his treatment had been astonishing, especially since the method had for the most part been used as a last resort, and some of the patients had been unconscious and in an extremely alarming condition. Dr. Waugh stressed the importance of early diagnosis and treatment of various foci as potential sources of septicaemia.

Professor ROBERT MUIR (Glasgow) expressed high appreciation of the painstaking work that Professor Cadham had reported. He considered it important to try to understand exactly what we meant by septicaemia. There were two extreme types of bacterial invasion of blood: one, exemplified by typhoid fever, in which the bacterial invasion was reduced as rapidly as it occurred; the other, a more rapid invasion leading frequently to a rapid fatal termination. Clinical cases presented all intermediate stages, and septicaemia remained a very hazy term. It was essential to recognize that phagocytosis was all-important for destruction of organisms, and he considered that complement was not so important as antibodies for recovery. The raising of the complement titre observed by Professor Cadham he regarded as an important biological observation. In septic infections there were many borderline cases and a little something to help might make all the difference. Professor WILLIAM BOYD (Winnipeg) thought that immunologists should not overlook entirely the findings of morbid anatomy in connexion with their work. Professor CADHAM, in the course of his reply, stated that he could not entirely agree with the view that complement was not involved in the toxin-antitoxin reaction. He would not wish to advocate his type of treatment as the most desirable, but hoped that the discussion would prove to have been useful.

### PHYSIOLOGY OF THE PARATHYROID GLANDS.

Professor J. B. COLLIP of McGill University, Montreal, opened the discussion on the physiology of the parathyroid glands. He dealt particularly with the more recent developments in this field. The function of the parathyroid apparatus was apparently directed towards the maintenance of a definite level of total calcium in the circulating plasma, and was subserved by the action of the internal secretion elaborated by the glands. He dealt with the general metabolism of calcium, its different physiological roles, its absorption and excretion, and the relation to it of the metabolism of phosphorus, especially in parathyroid deficiency. In connexion with the preparation of the hormone he stressed the fact that preliminary hydrolysis with very dilute hydrochloric acid (3 per cent.) for forty minutes on a boiling water bath gave the most potent extracts, prolonged acid hydrolysis destroying the active principle. Purification had not yet been carried beyond a proteose-like fraction. Either the hormone itself was of protein nature or else it was intimately associated with such a substance. Trypsin and pepsin destroyed the activity, and no effective method of oral administration had been obtained. The physiological effects and the pathological effects of overdosage were reviewed. In such overdosage there was marked increase in the calcium content of kidney tissue, other glandular tissue being practically unaltered in this respect. Hunter's study of generalized osteitis fibrosa was referred to and also other diseases affecting calcium metabolism or inducing tetany. The interrelationship of the parathyroid secretion and vitamin D was discussed.

Professor V. H. K. MOORHOUSE (Winnipeg) discussed the mechanism of secretion by the parathyroids. To what stimuli was this secretion a response? There were nerve fibres along the course of the blood vessels, apparently autonomic and probably arising from the cervical sympathetic. It still remained to be ascertained whether excitation of these would induce the secretion. The

chemical excitors, if there were such, were unknown. Perhaps the level of blood calcium was the determining factor. The actual manifestation of tetany was characteristic of a nerve protoplasm disturbance. Excitation of nerve muscle became increased about ten times over normal. It could be observed after section of the nerve, and up to the time of its degeneration. The peripheral nerves were not the only sites of disturbance following parathyroidectomy. Chronaxie was lengthened, suggesting lowering of excitation, and this observation could not at present be easily correlated. There were sensory and afferent as well as motor disturbances. In dogs and cats intense irritation about the mouth and nose was observable. The loss of appetite and vomiting seen in such animals following parathyroidectomy were probably due to effects on the nerve centres in the mid-brain and medulla. There was a general involvement of the nervous system, but different parts were unequally affected.

Professor J. C. MEAKINS (McGill University) considered that the criterion of disturbance of parathyroid function was to be found in the study of blood calcium and calcium balance, although the latter was open to many fallacies. There were six diseases associated with disturbance of calcium metabolism: parathyroid deficiency (spasmodic tetany), nephrosis, steatorrhoea with megalocolon, infantile rickets, osteomalacia, and generalized osteitis fibrosa (von Recklinghausen's disease). Of these only two were associated with lesions of the parathyroid: parathyroid tetany, and its antithesis, generalized osteitis fibrosa. There had been considerable confusion in the study of the latter and of osteomalacia, and this must be borne in mind in utilizing the earlier literature. In nephrosis with a calcium deficiency there was usually a good response to parathyroid therapy, though the cause and effect were not yet known.

Dr. D. ROY MCCULLAGH (Cleveland Clinic) reported the findings in a series of cases exhibiting parathyroid deficiency following operation studied by himself and Dr. E. P. McCullagh; they had endeavoured to find means of controlling phosphate metabolism in this condition. They observed that while many such cases exhibited a constant low level of serum calcium the patient's tetany symptoms varied from day to day parallel with the serum inorganic phosphate. In normal sugar tolerance curves it was well recognized that as the blood sugar rose the phosphates showed a slightly delayed fall. In post-operative parathyroid tetany the relationship was somewhat emphasized. As the phosphate fell the neuro-muscular excitability lessened. An attempt had been made to apply this finding to treatment. After a carbohydrate meal the symptoms were greatly but only temporarily relieved; calcium gluconate was ineffective, but administration of lactose had been found to give very beneficial results, these being accompanied by a slow steady fall of blood phosphates.

Professor A. T. CAMERON (Winnipeg) referred to results he had obtained showing that the blood calcium of normal young rats was below normal, and at a level associated with tetany, for a large part of the year, though open tetany was never manifested. The explanation obviously seemed to be a dietary deficiency in vitamin D, and he reported results recently obtained by one of his students, Mr. C. F. Code, supporting this view. In these animals the blood calcium could be maintained during winter at maximum or normal levels by giving food irradiated from a carbon arc lamp, or by adding irradiated ergosterol to the diet. Numerous observations by various workers had shown beyond doubt that marked overdosage of the vitamin would considerably increase the plasma calcium. Since, however, over a considerable range of vitamin dosage the blood calcium remained constant, whereas any injection of the parathyroid secretion had its effect, the inference was reasonable that the main control over the height of blood calcium was exercised by the vitamin, perhaps through the parathyroids. The available evidence bearing on the effect of vitamin dosage and overdosage following parathyroidectomy was quite conflicting, while little if any work seemed to have been done to ascertain the result of continuous parathyroid injection in experimental rickets, and the speaker suggested that study of these problems might well throw much greater light on the whole problem of calcium metabolism.

## SECTION OF MENTAL DISEASES AND NEUROLOGY.

*Thursday, August 28th.*

### THE CLASSIFICATION OF BRAIN TUMOURS.

THE chair was taken by Dr. A. T. MATHERS, Vice-President of the Section, who, in introducing the speaker, gave a brief historical sketch of the subject. Dr. WILDER PENFIELD (Montreal) commenced by saying that, to be of more than academic interest, a classification of brain tumours must group together neoplasms whose biological behaviour and histological structure had certain similarities. Any other type of classification was, he considered, of little value from the standpoint of treatment and prognosis. Tumours of the brain might be considered first under two main headings: (*a*) gliomas, and (*b*) tumours of the sheaths of the nervous system which were encapsulated. After referring to much of the work done by others in the study of gliomas, the speaker submitted the following as the most useful and simple classification of these tumours: (1) neuro-epithelioma, (2) multiform spongioblastoma, (3) medulloblastoma, (4) oligodendroglioma, (5) polar spongioblastoma, (6) astroblastoma, (7) astrocytoma, and (8) ependymoma. The pathology of these types was described in great detail, and clinical examples of each were presented and well illustrated by slides. Tumours of the sheaths of the nervous system the speaker thought had generally been better recognized than the gliomas, though the cytological interpretations had been curiously varied. These tumours, he considered, could best be classified as follows: (1) menigeal fibroblastoma, (2) perineural fibroblastoma, and (3) neurofibroma of von Recklinghausen's disease. Considerable time was given to a discussion of the histology of sheath tumours, and clinical cases in which operative treatment had been most successful were cited. In concluding, it was urged that technical excellence in neuro-surgery was not enough. It was necessary that the surgeon himself should understand as nearly as possible the characteristics of the lesion he would combat, and that clinical judgement and therapeutic insight should be based upon discriminating histological study. The classification presented was only one of a number of possible ones, but it had in its favour the fact that it had withstood the test of practical clinical application.

Dr. R. G. ARMOUR (Toronto) followed by congratulating the speaker on the excellence of his presentation. Dr. HENRY WOLTMAN (Rochester, Minn.) commented on the classification of tumours presented, and cited a number of clinical cases which had been operated on at the Mayo Clinic. Operative treatment, he pointed out, had done much to prevent blindness in cases which, at one time, would have gone into darkness with no hope of relief. He referred to *x*-ray therapy of certain cases, and stated that he was of the opinion that the more embryonic the structure of a tumour, the more responsive it was to this type of therapy. He had noted also that in certain cases where operative treatment had been carried out, the tumour was subsequently found to have altered in histological structure. The newer studies in tumours of the brain, he maintained, might do much to settle medico-legal disputes about injury as a possible etiological factor in the development of tumour. Sir JAMES PURVES-STEWART (London) urged that it was now the duty of the diagnostician not only to localize the lesion in the brain, but also to make a pathological diagnosis. This, he contended, was essential, because there were many cases in which complete removal of the tumour should be done immediately, whereas there were others in which nothing more than a decompression should be attempted. He complimented his Canadian colleagues on their diagnostic technique in the use of ventriculography and encephalography, and stated that it was unfortunate that often in Great Britain these diagnostic aids were not adopted early enough. He stressed the use of both methods of diagnosis, pointing out that when it was suspected that the tumour was subtentorial, a ventriculography should be done, but if it was thought that the tumour was supratentorial, an encephalogram should be the method employed. Work like Dr. Penfield's, Sir James felt, was a stimulus to them all

Dr. ADSON (Rochester, Minn.) commented on the opener's classification, and said that Dr. Penfield's work was doing much to clarify diagnostic difficulties. A diagnosis based on an understanding of pathology he considered as sound. What the surgeon wanted to know was: (1) Was the tumour encapsulated? (2) Was it removable? His experience of many years as a neuro-surgeon had made him much more conservative than once he had been. In view of the fact that all cases of brain tumour did not go on to death, but that many enjoyed life expectancy, radical surgery was, he felt, not always indicated. The pendulum had in recent years been swinging in the direction of radicalism, but the time would come when they would become as conservative in their judgement as if the operation was to be performed on themselves. Dr. WILLIAM BOYD (Winnipeg), who had been acting as chairman to the Pathology Section, arrived at this time, and expressed his regret at having missed the main part of the discussion. He commented on more modern methods of staining nervous tissues, and asked if Dr. Penfield could explain why one so frequently found hydrocephalus associated with brain tumours. Dr. PENFIELD, in reply, said that he had been greatly interested in Sir James Purves-Stewart's remarks on diagnostic methods. Where ventriculography was employed, he considered it should be followed immediately by operation. He concurred with Dr. Boyd in his observations regarding the association of hydrocephalus and brain tumour, but did not feel that he could offer a satisfactory explanation of the phenomenon.

## SECTION OF PREVENTIVE MEDICINE.

*Thursday, August 28th.*

### THE LABORATORY IN A SCHEME OF PREVENTIVE MEDICINE.

THE members of the Section met, with Professor A. J. DOUGLAS (Winnipeg) in the chair. The subject was introduced by Dr. W. G. WILLOUGHBY (M.O.H., Eastbourne) in a paper which was published in full in the *Journal* of September 13th at page 418. The CHAIRMAN expressed the appreciation of the Section in receiving this paper from the President-Elect of the Association. Dr. M. R. BOW (Alberta) said that in providing efficient laboratory service for small urban and rural districts he had found that the plan of employing the municipal hospital laboratory for public health purposes (on a sliding scale of charges) had worked most satisfactorily. This arrangement gave the hospital laboratory workers the preventive viewpoint. To discourage the use of inadequate doses of diphtheria antitoxin no packages containing less than 20,000 units were distributed. In remote districts diphtheria patients were released after three weeks' quarantine without swabs. In districts accessible to a laboratory two negative cultures were required. Dr. A. S. M. MACGREGOR (Glasgow) referred to the function of the laboratory in dealing with the problems of bacteriological immunity. He described the situation that had arisen under the Local Government Act, which enlarged the scope of the medical work of local authorities in Great Britain. One of the problems of the future would be how to take full advantage of the facilities for research which these new responsibilities would provide. This branch of preventive medicine should develop in co-operation with all the other laboratory facilities in the area. Dr. J. T. PHAIR (Ontario) stated that the provincial department maintained a central laboratory at Toronto, with some seven branches placed at strategic points in the province. The service was gratuitous and largely used. During the last two months a full-time pathologist had been added to the staff, and the department was now prepared to offer further assistance to the general practitioner by examining pathological tissue of any type; for this service a fee of one dollar per specimen was charged. Professor J. S. FITZGERALD (Toronto) emphasized the value of the early administration of a large dose of antitoxin in every case in which the practitioner had reason to suspect that the patient was suffering from diphtheria, regardless of the result of the examination of the material submitted to the laboratory. Dr. JAMES ROBERTS (Hamilton) held that the laboratory should be situated within easy access of the building in which the work of the administrative health officer was carried on. Schick and Dick tests to determine the susceptibility of contacts were preferably done by a laboratory expert, and the number of such examinations, with others such as those for ringworm in school children, was found to be materially increased if the laboratory service was readily available to the executive officer. The general public was entitled to the financial saving which followed lessened detention of suspects and contacts when frequent use of the laboratory was made, and this should be pressed for by the chief of the department. Dr. A. GRANT FLEMING (Montreal) gave it as his experience that practitioners did not often expect the laboratory to make a diagnosis, and that in this matter the form of the report was of some importance. He asked whether in England the release swabs after diphtheria attacks were taken by the private physician or the public health officer. Dr. ALFRED GREENWOOD (M.O.H., Kent) expressed his appreciation of Dr. Willoughby's paper. The bacteriological laboratory in the county of Kent examined 25,000 specimens annually for 1,100 general practitioners in the county free of charge. The laboratory should be considered primarily as an aid to diagnosis. He emphasized the desirability of injecting large doses of antitoxin in diphtheria at the earliest possible moment without waiting for a report from the laboratory, and even after negative reports where the clinical signs suggested a diphtheria infection.

### PASTEURIZATION IN A SCHEME OF MILK DISTRIBUTION.

The paper read by Dr. A. S. M. MACGREGOR (M.O.H., Glasgow) in opening this discussion appears in full at page 463. Dr. M. R. BOW (Alberta), who followed, said it was the duty of the health department to ensure a safe milk supply. While theoretically pasteurization was undesirable, in practice it was to be given a definite place in any scheme of milk distribution. Clean milk was not necessarily safe milk, though all measures to improve the cleanliness of the milk had to be encouraged. The need for continuous careful supervision of pasteurizing plants by health authorities was shown by a recent disastrous typhoid epidemic in Montreal. Without this precaution there was a most dangerous sense of false security. Apart from its effect on vitamin C, it appeared that the process of pasteurization did not impair the nutritive value of milk; fruit and vegetable juice could be given to the child to make good this deficiency. For efficient pasteurization the milk had to be held at the required temperature for a sufficient length of time and then rapidly cooled. The experience in Canada had been that wherever scientific pasteurization had been employed milk-borne infections had been reduced to a remarkable degree. The degree to which the process was used differed widely in different parts of the country. Professor J. S. FITZGERALD (Toronto) referred to the work of Dr. Ray Price in Toronto on strains of *B. tuberculosis* isolated from children suffering from non-pulmonary forms of tuberculosis. These children were admitted to the hospital for sick children both from communities in which pasteurization laws were and from those in which they were not in force. Dr. GRANT FLEMING (Montreal) welcomed Dr. Macgregor as a supporter of pasteurization. He did not believe in milk grading, but urged that all milk should be pasteurized certified milk. Certified milk was not safe, because of the human element. Pasteurization destroyed not only the tubercle bacillus, but pathogenic organisms responsible for other communicable diseases. The CHAIRMAN summed up briefly, and expressed the opinion that all milk should be pasteurized, scientifically and under official supervision, in order to obtain the best results. Dr. MACGREGOR, in reply, expressed his appreciation of Dr. Bow's contribution as a clear and inspiring exposition of the subject. He stressed once again his view that clean milk was not necessarily safe milk. In Great Britain the big milk distributors had adopted pasteurization for commercial reasons. The impulse to such measures had diminished, however, with the production of cleaner milk. The public was confused by official "grading." The higher grades were unpasteurized, and their increased production would diminish as more pasteurized milk was consumed.

Mr. J. GIBBARD (Ottawa) read a paper entitled "Electrophoresis of *Neisseria intracellularis* (meningococcus)."

## SECTION OF OPHTHALMOLOGY.

*Wednesday, August 27th.*

### THE CONTROL OF TRACHOMA.

AT the opening meeting of the Section, the President, Mr. N. BISHOP HARMAN, invited the members to congratulate Dr. Harvey Smith (Winnipeg) on his election as President of the British Medical Association for the coming year. It might well be accounted an honour, not only to the recipient, but also to the Ophthalmological Section, of which he was a member. Professor HERBERT BELL (Winnipeg) then took the chair, and Mr. HARMAN read a very interesting paper on the control of trachoma, which will be found printed in this issue at page 457.

Mr. A. REID MOODIE (Dundee, Scotland) discussed the value of the various measures already in existence. He believed that compulsory notification was a valuable weapon in the fight against trachoma; it had been adopted in twenty-four countries, but in Great Britain Glasgow alone had made the disease notifiable, and it was always followed up in that city by treatment under the supervision of an ophthalmic surgeon. During the first six years of compulsory notification in Glasgow (1914–19) the average number of cases notified was seventy-four, while in the period 1924–29 it was forty-two, a decrease of 38 per cent.; 39 per cent. of the cases occurred during school age. Nearly all the patients (99.2 per cent.) came from houses of three rooms or less, and the incidence among inhabitants of one- and two-roomed houses was almost double that among families occupying three rooms. Dr. Wibaut, at the Amsterdam Congress, had determined for each country its trachoma index, and with its aid had classified the countries into seven groups, with indices ranging from 0.1 per cent. as in Great Britain and Germany, to over 61 per cent. as in Egypt and Palestine. A chart illustrating this grouping was shown. Antitrachoma measures in Amsterdam included the regular inspection of school children, the keeping of a trachoma register, and semi-compulsory treatment. In Italy, Government subsidies were granted to local authorities to provide free ambulant and hospital treatment; there were also university courses for the training of medical practitioners in early diagnosis. The United States, in addition to immigration restrictions, had instituted propaganda by lectures and literature. Infected areas were visited by teams of medical specialists and nurses, whose visits, when considered necessary, were followed by the arrival of a mobile dispensary in the form of a rail car fully equipped for carrying out treatment. In Japan very wide powers had been delegated to administrative bodies, enabling them to carry out a general medical inspection when considered necessary. The poor received free treatment and instruction in prophylaxis. Mr. Moodie thought it might be useful for countries to offer prizes for scientific research.

Dr. WHITESIDE ROBERTSON (Guernsey) gave particulars of the International League against Trachoma which he had received from Dr. Wibaut of Amsterdam; this had now come into being in Geneva (*Journal*, August 30th, p. 328). He outlined the objects of the league, and the action intended to be taken. It was proposed to notify the different Governments of the establishment of this organization, to point out the devastating and contagious nature of the disease, and to ask for moral and, if possible, financial support. The league hoped to advance the co-operation of different organizations, to inaugurate a centralized campaign, and when necessary to give advice about the best measures for controlling the disease. It was proposed to form a library on trachoma by asking authors to send reprints of any articles or books on the subject. Dr. Whiteside Robertson described the ophthalmic schools at Swanley in Kent, and eulogized the work of Mr. Stephen Mayou, who had control of them. For a country in which the incidence of trachoma was low, Swanley could well be taken as a model. A number of excellent photographs of the homes were shown. The secretary read a communication from Mr. Stephen Mayou, in which he stated that in conjunction with Dr. McCartney, pathologist to the Metropolitan Asylums Board, he had carried out investigations, but that they had failed to isolate the *Bacillus granulosis* of Noguchi. In one instance a kindred organism had been isolated, which probably belonged to the xerosis group. They had failed to inoculate trachoma directly from the patients into monkeys. They had also experimented with the organism sent by the Rockefeller Institute, and had failed to reproduce trachoma in monkeys with their organism, although some redness and slight follicular enlargement was apparent for a week or so after inoculation. Ordinary monkeys kept in a dirty condition, or in cages with sawdust or sand, were liable to get some follicular enlargement from irritation. Professor JACKSON (Denver, U.S.A.) said that the American experience of trachoma had emphasized its contagious nature, and the factor of family or racial immunity. In the Southern States the negro, living in large numbers and always gregarious, imported from Africa under general conditions as bad as those of immigrants from Southern Europe, and largely segregated from the whites as were the Indians, had remained practically free from trachoma. Cases occurred in them, but very exceptionally, and rarely among those of mixed blood. The American Indians were very subject to trachoma, which had increased rapidly among them in the last century; until now a few hundred living on the shore of Lake Superior were reported as the only tribe free from the disease. In Philadelphia, forty years ago, all the cases of acute trachoma occurred in recent immigrants. In Colorado in the last thirty years most of the cases had been in the Indians chiefly segregated on reservations. The belt of what might be called indigenous trachoma in the United States began in the Southern Allegheny Mountains, and among the whites more purely British in origin than any other part of the population of the United States. The worst family and locality endemics had been found in the mountains of Kentucky and North Carolina. Professor Jackson discussed next the relation of the Noguchi bacillus to trachoma. Noguchi had obtained it from five Indians suffering from this disease in New Mexico and Arizona, and had termed the small slender organism *Bacillus granulosis*, a name that had helped to favour the idea that it was connected with follicular disease of the conjunctiva other than trachoma. It had never been found in any other disease of the human conjunctiva, as had the so-called inclusion bodies of Prowazek and the blue bodies of Lindner. It had been found in trachoma in patients other than Indians in the United States and in North Africa. It had been isolated in pure culture, transmitted through many generations, and its inoculation gave rise in monkeys to a disease very closely resembling that produced by inoculations with material from the trachomatous conjunctiva. In at least two instances of inoculation into the human conjunctiva it had also originated a disease which resembled early trachoma in man. From watching the dozen monkeys which had been inoculated by Drs. Finnoff and Thygeson, the speaker's belief was that the Noguchi bacillus was probably the cause of trachoma. He thought that a general search for this bacillus should be made in all cases of this disease.

Dr. A. J. BALLANTYNE (Glasgow) said he had been unable to satisfy himself of the infectivity of the disease. He had been struck by the marked difference in individual cases in epidemics of conjunctivitis occurring in schools, convents, etc., and he thought that in cases termed trachomatous there might be more than one infection. He considered the tissue reaction a most important factor in determining the disease. He had experienced great difficulty in tracing the origin of the infection in sporadic cases. Mr. ARTHUR W. ORMOND (London) believed that many cases called trachoma were simply follicular conjunctivitis, and there was no single factor which could conclusively prove that a patient was suffering from this complaint; he regarded epidemics of the disease as due to a mixed infection. In his own experience he had not had a single case of a person blinded by trachoma. He agreed with Dr. Ballantyne in considering that the soil was a matter of the utmost

importance. Dr. AUSTIN A. HAYDEN (Chicago) described his own personal experience in contracting the disease while a house-surgeon in York. In the act of expressing follicles in a case of trachoma some fluid from the patient had accidentally entered the speaker's eyes, and although they had been washed out within half an hour, he contracted the disease, which was well developed in five weeks. He had known other doctors who had contracted the disease in a similar way, and whose general health, which was excellent, could not possibly have aggravated the condition. He strongly recommended the use of protecting goggles in dealing with cases of trachoma.

### COLOUR VISION.

Professor FRANK ALLEN (Winnipeg) read a most suggestive paper on certain aspects of colour vision. The conclusions drawn had resulted from extensive laboratory researches, and he viewed the subject from the standpoint of the physicist. He emphasized the fact that he had been able to show that colour vision conformed to other sensory and secretory reflexes.

## *Thursday, August 28th.*

### INCIPIENT CATARACT.

The second session of this Section was devoted to a discussion of the management and treatment of incipient cataract. The paper of the opening speaker, Mr. L. V. CARGILL (London), was printed in the *Journal* last week at page 419.

Professor T. HERBERT BELL (Winnipeg) reported three cases in which he had endeavoured to treat incipient cataract by one of the new methods; in two there had been apparent success, but the other was a complete failure. The treatment followed had been characterized by Mr. Cargill as useless, but he could not subscribe to that statement, nor could he absolutely controvert it; his first two cases certainly encouraged him, however, to make further attempts in suitable conditions. The method he followed was that described by Davis of New York—the hypodermic injection of lens antigen, with dietary regulation, and attendance to the general health. A manœuvre which he had occasionally found useful in cases of early central opacity, where the patient had attained some improvement of vision under a mydriatic, was to perform a double preliminary iridectomy. He had not wandered so far as had Mr. Cargill from the precepts of their mutual teacher, the late Professor MacHardy, since he occasionally made use of a slight trituration of the more affected eye; so far he had had no bad results, but a more rapid maturation of the cataract, with greater ease of extraction. Mr. A. W. ORMOND (London) discussed the various procedures which he had tried. He had carefully watched many cases in which drops of potassium iodide, lens antigen, and the other treatments had been employed, but had been unable to satisfy himself of the efficacy of any local measure. He had not seen any case in which the lens opacities had retrogressed. He had experimented with the administration of paraphakin, and had also been disappointed in that method of treatment. Focal sepsis was of the greatest importance; it seemed to influence the incidence of cataract and also its treatment. In certain specified cases he advocated the artificial maturation of the lens. Mr. Ormond agreed with Mr. Cargill that it was most unfortunate that they were tied to the term "cataract," which was applied to any lens opacity; patients had frequently come to him in a very nervous and anxious state, having been told by opticians that they had cataract. He would limit the use of the term cataract to cases in which vision was reduced to about 6/18. He thought that there was an underlying factor in the general condition, and that many cases of so called primary cataract were in reality secondary to some general systemic defect; he was inclined to regard most cases as pathological rather than physiological. He allowed patients to use their eyes, short of fatigue. Professor JACKSON (Denver, U.S.A.) objected to the term "incipient cataract" because it seemed to imply that the opacities would increase. In his experience about half the patients over the age of 50 had lens opacities; of these only a small proportion progressed to the stage requiring operation, but a partial opacity frequently called for relief. He mentioned the case of a woman, aged 65, who had a general haziness of the lens which rapidly reduced her vision. She apparently was not drinking enough water; she was recommended to take more, and her visual condition decidedly improved after carrying out this simple measure. The study of early cataract could be conducted better on private patients than in the mass in a clinic where many of them would not co-operate in the treatment prescribed. Patients should have proper optical correction, and periods of rest from reading and other close work; they should be taught how to command and maintain the best condition of illumination. Dr. A. J. BALLANTYNE (Glasgow) agreed with Mr. Ormond in limiting the use of the term "cataract," but he thought it might be extremely difficult to confine the term to any definite standard of lowered visual acuity. In diabetic patients he had often seen the vision improve with general treatment, in spite of the apparent stationary condition of the lens opacities. He then discussed the influence of toxic conditions. He made it a rule to endeavour to improve the vision by optical correction; bad cases should not be considered unimprovable, for he had frequently been surprised at the relief obtained by the use of carefully prescribed glasses. Dr. ROBERT BEATTY (Detroit, U.S.A.) related his experience as regards lens antigen. He had made very careful tests in twenty-five selected cases, with examination of the visual functions and fields, and had prepared very accurate diagrams of the opacities, but he could not say that, except in a few cases of questionable improvement, he had obtained any very favourable results. Mr. A. REID MOODIE (Dundee) dealt with certain aspects of the preliminary and other operations, and Dr. FREDA RAMSAY (Beckenham) gave an account of her experience in India when attached to the hospital of Colonel Smith. Mr. BISHOP HARMAN (London) reviewed the various treatments, and agreed with Mr. Cargill, Mr. Ormond, and the other speakers as to the necessity of having a patient with cataract thoroughly overhauled. He gave an interesting account of the examination of his first patient in Harley Street. The patient was his own mother, and he was terrified to find lens striae in both eyes. He had cautiously avoided making mention of them to her, and her vision had remained perfectly good for fifteen years. That had been an excellent lesson to him in the way patients with lens striae should be handled. Mr. KELLY (Montreal) also took part in the discussion.

Mr. CARGILL, in his reply, referred to Professor Bell's and Mr. Ormond's remarks regarding preliminary operation; while it was doubtless safe in their hands, he considered it unwise to teach students the trituration operation, and he considered it unnecessary to practise it himself. He reviewed the remarks of the various speakers on the influence of sepsis, and mentioned a remarkable case of a private patient who, after developing a septic gall-bladder, and undergoing the mental strain of her husband's death from cerebral tumour, had developed well-marked cataract within a year, although she had not previously shown the slightest sign of lens opacity.

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## SECTION OF DISEASES OF CHILDREN.

## *Wednesday, August 27th.*

### BACILLUS COLI INFECTIONS OF THE URINARY TRACT.

THE President, Dr. ROBERT HUTCHISON, took the chair and made a short opening address, in which he recalled the two previous meetings of the British Medical Association in Canada, at both of which he was present. There had been no Section of Paediatrics in 1897, as it was not then thought a sufficiently important subject. Dr. Hutchison reviewed the progress in diagnosis and treatment of disease in children, attending especially to the diminution of acute gastro-enteritis in England, and the improvement in the prevention and treatment of rickets.

Dr. K. D. WILKINSON (Birmingham) opened a discussion on *Bacillus coli* infection of the urinary tract in children with the paper which appeared in full in our last issue.

He said that it was a common condition, the frequency depending upon one's definition of the disease. It was not easy to diagnose in young infants. He classified cases clinically as (1) acute, (2) subacute, and (3) chronic, and described the symptoms and signs of these varieties. He challenged the new conception of pyuria as an interstitial nephritis, as put forward recently by Dr. Bruce Chown, and stated his opinion that the infection was not blood-borne, but was an ascending infection up the urinary tract. Dr. D. NABARRO (London), whose introductory paper was published also last week, said there was little direct evidence that the infection was primarily one of the renal pelvis. The *B. coli* was a harmless saprophyte in the bowel, though even there it had been credited with a pathogenic role. It had pathogenic properties in other organs. He did not believe that cultural characters of organisms became fixed, but that they might vary with circumstance and environment. Different strains of *B. coli* had been found, some haemolytic others non-haemolytic. Urine should be repeatedly examined to see whether the same organism was present. He emphasized the proportion of cases in which *B. coli* pyuria was secondary to congenital or acquired abnormalities of the urinary tract. It had been found that 2.5 per cent. of all post-mortems on children showed some congenital abnormality of their urinary passages. He showed pictures of specimens illustrating these abnormalities.

Dr. HELMHOLZ (Rochester, Minnesota) agreed with Chown, Wilson, and Schloss that post-mortems of these cases usually showed a lesion of the kidney, but was not convinced that such lesions were due to the *B. coli*. Experiments he had performed on animals showed that while the blood-borne streptococcus and staphylococcus tended to localize particularly in the kidney, the *B. coli* very rarely did so. This fact was against the theory of blood infection in children. It had been denied that any pelvic inflammation existed in post-mortem cases, but he pointed out that the kidney pelvis was not easy to examine microscopically; numerous sections would be necessary to show its pathology, and in his opinion the pelvic lining was destroyed very rapidly after death. He had found definite inflammation when the post-mortem was performed within two or three hours of death. Pelvic inflammation was also found to heal very rapidly in experimental animals. On the whole he was inclined to believe that the infection was only haematogenous in the newborn, but that after the first few weeks of life it was an ascending infection. He did not, however, deny that kidney lesions might be present, even in the milder cases. The disease was frequently associated with gastro-enteritis and was there commoner in girls than in boys. He had pursued much the same lines of treatment as Dr. Wilkinson. Experiments had shown that if *B. coli* were grown in alkaline broth and rapidly transferred to acid broth, they almost ceased to multiply, though the reverse was not the case. He had had good results from treatment by urotropine (hexamine) in 0.5 gram doses, and generally used ammonium chloride and ammonium nitrate to acidify the urine up to a *p*H of 5 to 5.5. He thought that urotropine ought to be pushed to the point of bladder irritation; haematuria when it occurred came from the bladder. If there was no improvement within three weeks he thought then all cases should be examined for congenital abnormalities.

Dr. BRUCE CHOWN (Winnipeg) dealt especially with the pyuria of infants under 2, as most of his work had been on these cases. He did not think that there had ever been proof of a pure pyelitis occurring in infants, nor was there often any post-mortem evidence of pyelitis even where the kidney was much diseased. He had found a suppurative interstitial nephritis in most of his fatal cases, and others had reported the same. At the earliest ages boys were affected only slightly less frequently than girls, though in older children girls were more commonly affected. He believed the infection to be haematogenous in origin, though he admitted the possibility of a lower urinary tract infection occurring in some cases. It must be borne in mind that the sex incidence and the route of infection were inseparable subjects, and that at present we were not in a position to state the exact sex incidence. One point in favour of the presence of nephritis even in milder cases was the comparative frequency of pus casts in the urine. Dr. Chown pointed out the interesting fact that young calves who were too early deprived of the colostrum of their mothers' milk frequently developed a *B. coli* infection of the kidneys. This might have some practical bearing on the colostrum intake of young babies and the incidence of suppurative pyelonephritis.

Dr. R. R. STRUTHERS (Montreal) said that he had found pyuria very rare in male infants, and he had had no deaths from this cause. In chronic cases he had investigated for congenital abnormalities and had often found that a cure could be brought about by surgical treatment. Dr. H. C. CAMERON (London) said that one must be careful not to jump to the conclusion that a case of pyuria with pus in the urine was necessarily a simple urinary infection. This conclusion was often a complication of other infections, such as meningitis. He pointed out also the difference between the clinical course and the bacterial course of the disease; the former was often short, while the latter persisted for a long time. The PRESIDENT, taking a wide view, observed that more light might be thrown on the question if one could explain the incidence of the disease in adults, the question why *B. coli* pyelitis should be so common in pregnant women, and why it should occur especially on the right side. He suggested that a lateral infection should be considered as well as an ascending or descending infection. Many cases had been associated with a diseased appendix. He thought that an important part of the treatment was to raise the general standard of vitality. Diet was also important; he believed that cases improved if the milk in the diet was cut down. Dr. WILKINSON replied, and showed a radiogram of enlarged kidneys, probably congenital cystic disease, in which there had been a secondary *B. coli* infection.

## SECTION OF LARYNGOLOGY AND OTOLOGY

*Thursday, August 28th.*

### DIAGNOSIS OF LATERAL SINUS THROMBOSIS.

THE President, Sir STCLAIR THOMSON, opened the proceedings by expressing his pleasure at being in Canada again and at seeing so many of his old friends in the specialty. He welcomed especially the visitors who had come from the United States. Mr. FRANCIS MUECKE (London) opened the discussion on the early diagnosis of infective lateral sinus thrombosis with a paper which is printed at page 465.

In the subsequent discussion Dr. JAMES T. ROGERS (Montreal) said that the indifference of the public to the potential danger of a discharging ear, and the failure at times of the medical profession to recognize the aural source of the general sepsis, were two factors which seriously militated against an early diagnosis of lateral sinus thrombosis. It was not surprising that many of these cases, owing to the prominence of their general symptoms and the masked ear signs, found their way into medical wards, where they were treated as pneumonia, typhoid fever, meningitis, influenza, malaria, or gastro-enteritis. In the early diagnosis of the condition the otologist was influenced by a marked euphoria of the patient, a high septic temperature, chills and sweats, oedema and tenderness over the emissary vein, tenderness along the course of the internal jugular vein, and the blood picture of high leucocytosis and positive blood culture. Mr. J. F. O'MALLEY (London) emphasized the importance of tenderness over the mastoid, a sudden rise in temperature, and rigor, as pointing to systemic infection and indicating operation. Other symptoms were less significant. Dr. AUSTIN A. HAYDEN (Chicago) noted with some satisfaction that on the matter of blood culture there was some disagreement, because he felt that this was a valuable point. The leucocyte count was also often of considerable interest, as was the haemoglobin estimation. He laid most stress on chills and sweats, a history of ear discharge, the very characteristic temperature

curve, and the feeling of well-being experienced by the patient in the face of an obviously severe illness. Dr. A. LEISHMAN (Winnipeg) had operated on 703 mastoid cases in five years; among these were 18 cases of lateral sinus thrombosis with 11 recoveries. In most instances the symptoms appeared at about the fifth day, the first being a chill, though the patient felt particularly well between the rigors. He welcomed the insistence by Mr. Muecke on operation before waiting for all the signs of sinus thrombosis to develop. Mr. A. J. M. WRIGHT (Bristol) asked what was the risk of exposing a lateral sinus, and also how far this method of diagnosing the condition was accurate. How often was infection present when the sinus was exposed? Mr. MUECKE, in reply, said he felt sure that in many of the cases described as developing some days later the condition was actually present at the time of operation; others originated from a small spicule of bone penetrating the sinus wall, or because an infected mastoid cell had been left. In reply to Mr. Wright, he considered it better to explore the lateral sinus than to run any risk of overlooking an infected one.

### CANCER OF THE LARYNX.

With Professor H. S. BIRKETT (Montreal) in the chair, Mr. E. D. D. DAVIS (London) initiated a discussion on the diagnosis of cancer of the larynx (*Journal*, September 13th, p. 421). He said that extrinsic laryngeal cancer, or cancer of the pharynx which had extended to the larynx, usually came under observation so late that the diagnosis was obvious. The problem of diagnosis was intensified by the fact that cancer in itself produced no specific signs or symptoms. Intrinsic cancer of the larynx was seen at an earlier stage, since the early symptom of hoarseness sent the patient to the doctor much sooner, but cancer seen in its earliest stage was more difficult to diagnose accurately. If the nature of the condition was in any way doubtful, a diagnostic section was imperative and hastened the arrival at a correct conclusion. He had never seen any harm follow the removal of a diagnostic piece, but the picture might be entirely altered and the diagnosis be made more uncertain in the case of a negative section. In suitable cases time would settle the diagnosis, and judicious waiting, with an examination once a week, or at even longer intervals, would finally reveal the truth. If these methods failed in a case of suspected cancer, it was justifiable to perform an exploratory laryngo-fissure, having previously obtained full permission to proceed to a radical operation.

Sir STCLAIR THOMSON (President) said that earlier diagnosis of intrinsic cancer was not likely to eventuate until the public learned to consult the medical profession earlier for slight but persistent pharyngeal symptoms, and until the profession was more constantly on the watch for this disease in men of cancer age and in women of any age. In intrinsic cancer there should be no precipitancy in the attempt to establish a diagnosis. A few weeks of vocal rest (even silence), abstinence from tobacco, reduction of alcohol, and repeated examinations were valuable aids in confirming or eliminating suspicion; the interval afforded an opportunity for other complete investigations which, in addition to a blood examination, should include every reliable test for tuberculosis, it being remembered that a positive sputum finding was not invariably present in pulmonary or laryngeal lesions. Tuberculosis was more often mistaken for cancer than any other condition; the mistake was less frequent of diagnosing an epithelioma in the larynx as tuberculosis. All neoplasms removed from the larynx should be carefully examined under the microscope, and the larynx should be inspected once a fortnight for the three succeeding months. A malignant growth (whether indicated or not by the microscope), however completely removed, would show any recurrence within that time. If the biopsy reported the growth to be innocent, such a recurrence would almost certainly prove it to be malignant. True subglottic cancers were very difficult to diagnose in an early state, since the symptoms were absent or insignificant until the neoplasm had extended far enough to invade the edge of the vocal cord. It was in such cases, and in all doubtful cases, that an exploratory laryngo-fissure might be justifiable. When the diagnosis remained uncertain in spite of complete investigation, repeated observation, and rest to the larynx, a biopsy was indicated, but it did not always give a positive finding; it was most useful when the appearances suggested the presence of an innocent neoplasm or a tuberculous lesion. As Chevalier Jackson had said, "Every adult patient with hoarseness should be considered as possibly cancerous until proved otherwise"; this was particularly important when, as Mr. E. D. D. Davis had insisted, the alternatives of pachydermia, tuberculosis, syphilis, and simple tumour had been excluded. If the diagnosis remained doubtful, it might be well to advise a middle-aged or elderly subject to submit to treatment by the laryngo-fissure route, sooner than risk the strain of uncertainty and the danger of delay. Dr. PERRY GOLDSMITH (Toronto) congratulated the Section on the papers of Sir StClair Thomson and Mr. Davis. He reminded practitioners that old people could have cancer as well as middle-aged ones. Laryngectomy, he considered, should not be performed until the patient fully realized what that operation meant. Mr. J. F. O'MALLEY (London) was influenced by Sir StClair Thomson's insistence on the importance of relying on clinical symptoms in the diagnosis of cancer of the larynx, rather than on information supplied by the laboratory. Dr. CRAIG (Montreal), referring to the treatment of cancer of the larynx, said that his personal results had greatly improved since employing electro-coagulation and radium. Mr. E. D. D. DAVIS, in reply, emphasized the difficulty of reaching an early diagnosis in the case of a subglottic growth.

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## SECTION OF ORTHOPAEDICS.

*Thursday, August 28th.*

### FRACTURES INVOLVING THE KNEE-JOINT.

Mr. E. LAMING EVANS (President) took the chair. The opening of the discussion took the form of a symposium, fractures of the weight-bearing areas being dealt with by Mr. R. OLLERENSHAW (Manchester), whose paper is published at page 466, epiphyseal injuries by Mr. W. A. Cochrane (Edinburgh), and injuries of the extensor apparatus by Mr. R. Watson Jones (Liverpool). A short paper by Dr. Gallie (Toronto) on injuries to the ligaments and tendons of the knee was incorporated in the discussion. In the absence of Mr. Ollerenshaw his paper was read by the local secretary.

Mr. W. A. COCHRANE (Edinburgh) said that the important point in the treatment of forward displacement of the lower femoral epiphysis was to keep the knee fully flexed for at least two weeks, in order to prevent redisplacement. In neglected cases, exposure by a free anterior and posterior incision was preferable to a single incision, because by this exposure shock was reduced, the danger to the vessels was less, and reduction was easier. In old cases united with deformity, good results were secured by supracondylar osteotomy. Fourteen personal cases of anterior displacement of the lower femoral epiphysis were reviewed. Mr. WATSON JONES (Liverpool) remarked that in all injuries of the extensor apparatus, including avulsion of the quadriceps, fracture of the patella, avulsion or rupture of the ligamentum patellae, and separation of the tibial tubercle, the problem of treatment was to restore extensor power without in any way impairing flexion movement. In fracture of the patella this necessitated sufficiently firm operative fixation to render splintage unnecessary and to allow early movement. Cases were shown of fixation by double sutures of silk where full movement had been retained throughout. The difficulty of repairing avulsion of the ligamentum patellae from the patella was pointed out, and an operation was described by which the patella was anchored to the tibia by a strip of the ilio-tibial band. Cases illustrating the so-called "myositis ossificans of the quadriceps" were shown; it was pointed out that the condition was due to avulsion of the quadriceps from the patella, and was to be avoided by suturing the muscle to the bone before instituting movement. Separation of the epiphysis of the tibial tubercle demanded operative treatment, unless the injury occurred after fusion of this epiphysis with the

upper epiphysis of the tibia; in such a case displacement was limited, and could be controlled by simple strapping and a back splint. Dr. GALLIE (Toronto) stated that when tendons or ligaments were ruptured, the ends retracted and spontaneous union always resulted in a wide, weak scar. Immediate operative treatment was therefore advised in all cases, and this should take the form of repair by living fascial sutures, or of replacement by living tendons cut from the Achilles or semitendinosus tendons. Various types of operation were described, including a new procedure for replacement of the posterior crucial and internal lateral ligaments. The technique of this operation was very simple, the procedure was safe, and although results were not perfect they were as good as the results of Hey Groves's operation. For repair of avulsion of the quadriceps and ligamentum patellae the speaker preferred to use free fascia lata, darned through the muscle or ligament, and passed through a drill hole in the bone. A new technique was described for anchoring the patella to the inner femoral condyle in lateral dislocation. Dr. GEORGE (Winnipeg) described the treatment and results in a comminuted fracture of the upper end of the tibia which he had personally sustained some years previously. Dr. GALLOWAY (Winnipeg) said that in comminuted fractures of the upper end of the tibia it was impossible to restore accurately the original anatomical conditions. Since osteo-arthritis was liable to supervene in later years, he advised immediate excision of the joint in many cases. He asked if Mr. Watson Jones took any special precautions in the sterilization of the silk used, because in his experience it was frequently necessary to remove it later. Mr. CHITTY (Bristol) advised three months' immobilization in plaster for the repair of rupture of the crucial ligaments; this treatment gave perfect results with no disability. Hey Groves's operation was unsatisfactory because, although the results were good at first, the tendon subsequently stretched, and instability of the joint recurred. Mr. E. LAMING EVANS (London) showed a case of forward displacement of the lower femoral epiphysis in which displacement had recurred despite operative reduction; it had been necessary to operate again and to use a Steinman pin through the epiphysis and diaphysis. The pin was removed after three weeks. Mr. COCHRANE, replying, said that although he had never used a pin through the lower femoral epiphysis to augment fixation, he had seen one such case in which the end-result was unsatisfactory owing to infection. Mr. WATSON JONES replied that the silk was boiled for fifteen to thirty minutes, and was then stored in spirit. The essential point was that the silk was under no circumstances touched by hand. Silk had been used in over fifty cases, and only once had it been removed.

### SCIATICA.

Dr. NUTTER (Montreal), in a short paper on sciatica, maintained that true sciatic neuritis was due to mechanical pressure on the fifth lumbar root, usually exerted on the nerve as it lay in the intervertebral foramen between the disc and the intervertebral joint. All the symptoms and signs met with in sciatica were attributable to irritation of the fifth root alone, and the speaker did not consider that sacro-iliac disease, lumbo-sacral arthritis, and sacralization of the fifth lumbar transverse process were important etiological factors. The most valuable therapeutic agent was heat in any form. Diathermy for long periods—averaging forty-five minutes—was the routine treatment, and immobilization by a plaster spica or leather supports was only occasionally employed. Manipulation was sometimes useful to liberate adhesions of the nerve in the intervertebral foramen.

### CLINICAL CASES.

At a clinical session in the afternoon Dr. H. P. H. GALLOWAY (Winnipeg) showed cases of congenital dislocation of the hip reduced by operation, including cases five and eight years after conclusion of treatment. The patients had full movements and good stability with no limp. Dr. A. GIBSON (Winnipeg) demonstrated cases illustrating a new operation for fusing the spine by a special H-shaped graft from the tibia. A case in which arthrodesis of the shoulder had been performed ten years previously showed marked failure of development of the clavicle owing to functional disuse. Although the speaker was still prepared to perform the operation in boys he thought it was contraindicated in girls. Cases of tendon transplantation for thenar palsy and for abductor palsy of the hip were also exhibited. A case of partial fusion of the lower tibial epiphysis with resulting talipes varus owing to unbalanced growth of the fibula provoked considerable discussion. Dr. GARDNER (Winnipeg) asked whether it would be feasible to excise the lower epiphyseal line of the fibula in order to balance growth. Dr. GALLOWAY (Winnipeg) said that he had seen a case where the lower epiphyseal lines of both tibia and fibula had been excised with a good result, although there was considerable shortening. Dr. GIBSON (Winnipeg) preferred to perform osteotomy of both bones above the epiphysis. Since the girl was now 15 years old he did not anticipate further growth, and thought that an operation was now due. Mr. WATSON JONES (Liverpool) said that McFarland of Liverpool had reported several such cases; he thought that the condition was due to compression of part of the lower epiphysis of the tibia by the upper and inner angle of the astragalus. More than one osteotomy was necessary as the child grew older, and it was advisable to overcorrect the deformity by taking a piece from the fibula, and forcing it into the linear osteotomy of the tibia, so converting it into a cuneiform osteotomy base inwards. Cases were also demonstrated by Dr. W. A. GARDNER (Winnipeg), Dr. A. P. MACKINNON (Winnipeg), and Dr. A. A. MURRAY (Winnipeg).

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## SECTION OF RADIOLOGY.

*Thursday, August 28th.*

### BENIGN TUMOURS OF THE STOMACH.

THE President of the Section, Dr. A. E. BARCLAY, having thanked the medical men of Winnipeg for their kind hospitality, called on Dr. W. H. DICKSON (Toronto) to open the discussion on benign gastric tumours. Dr. Dickson dealt first with diffuse gastric polyposis, its incidence, age period of onset, and radiological diagnosis. He then passed in review the radiological diagnosis of a second group of tumours, which included single polyps, myomas, fibromas, neurocytomas, angiomas, and lipomas. The third group consisted of syphilitic gastric tumours, and the lecturer gave some account of the radiological method of demonstrating these lesions. His conclusions were: (1) while benign tumours of the stomach did not occur nearly as frequently as the malignant type, they were not as rare as was formerly supposed; (2) a correct diagnosis would be of inestimable value to the surgeon; (3) if correct diagnosis was not obtained malignant degeneration of the benign tumour might result; (4) syphilitic tumours of the stomach occurred with greater frequency than previous teaching had led us to believe. More accurate information on the pathology of these cases would be obtained from the *x*-ray room and the operating theatre than from the healed condition occasionally found at necropsy.

Dr. BERNARD MOONEY (Edmonton), who followed, said that he had looked up the records of the four general hospitals in Edmonton, and, having excluded inflammatory masses of a syphilitic character, those due to ulcer, and linitis plastica, he was surprised to find that not a single case of benign gastric neoplasm was available. The rarity of these conditions was also borne out by the published statistics of Charles Higgins and James Douglas. In the only case in his experience, the *x*-ray investigation showed the duodenal bulb deformed, but not the characteristic appearance of a duodenal ulcer. The interpretation of this finding was thought to be a benign pedunculated tumour about the size of a plum. An exploratory operation was performed, and a small tumour about three-quarters of an inch in diameter was found on the duodenal bulb, with a small pedicle extending through the pyloric sphincter, which was attached to the lesser curvature of the stomach about one inch from the pyloric ring. The pathological report was "simple fibroma." He concluded by congratulating Dr. Dickson on the large volume of this

type of work he had presented. The President thanked Dr. Dickson for his paper, which he described as a classic.

### X Rays in Medico-Legal Cases.

Dr. MALCOLM DONALDSON (London) then took the chair and called upon Dr. A. HOWARD PIRIE (Montreal) to read his paper on *x*-ray diagnosis in medico-legal cases. Dr. Pirie opened his paper by quoting from the *British Medical Journal* of June 8th, 1901 (p. 1390), in which Mr. Golding Bird pointed out the need for having an expert to make the radiogram, and also an expert to interpret it. The radiologist had as much right to know the history of the case as the physician; he had to know all about unusual epiphyses, and to be able to recognize the rare bones of the foot and wrist when these existed. He stressed the importance of making more than one view in every case of suspected fracture, as some might only be visible at certain angles. In some injuries of the limbs he advised that a radiogram of the corresponding region of the opposite side be taken as a routine. A negative *x*-ray might have considerable value. Dr. Pirie then showed a table completed by P. A. Davis showing the average number of days of disability following various fractures. It was interesting to note that 208 days was the average disability following a fractured femur and forty-eight days following a Colles fracture. Dr. E. E. SHEPLEY (Saskatoon) stressed the importance of securing plates immediately in all accident cases. A mild trauma was sometimes sufficient to activate a quiescent pathological condition such as chronic osteo-arthritis; in this way employers of labour were frequently held responsible for conditions alleged to have been caused by serious injury, when in reality the disability was pre-existent in a dormant state. The accurate interpretation of these changes was the field of the radiologist, who should be able to say whether they were acute and due to the alleged trauma, or chronic and due to pre-existing disease. Dr. W. H. DICKSON (Toronto) called attention to certain cases of injury to the carpal bones, in which immediately after injury there was no change or fracture, but two or three months later there were signs of collapse and degeneration. Dr. FRANK A. SMITH (Winnipeg) laid stress on the importance of correct interpretation of *x* ray films, and said this could only be done by a medical man skilled in radiology.

### The Mechanism of Swallowing.

The discussion which followed was opened by the President, Dr. A. E. BARCLAY (Cambridge). The members of the Section of Otology and Laryngology had been invited to take part in this discussion, during which Sir STCLAIR THOMSON (London) took the chair. Dr. BARCLAY said the act of swallowing was very complicated. It was definitely established that there was invariably a moment during which the pharyngeal space was obliterated prior to opening up to allow food to pass down. As the mouth, nasopharynx, and larynx were closed at this moment, it was strongly suggestive that a negative pressure must be produced, and that this was the dominant factor in the act of swallowing. Further, it was suggested from the rate at which the food passed, and also from the shape of the bolus, that this negative pressure extended some distance down the oesophagus. The larynx was shut off from the pharynx during swallowing by the drawing up of the laryngeal pharynx behind the laryngeal opening till it was in contact with the posterior surface of the epiglottis. In this epiglottic position, the laryngeal pharynx appeared to be an open-mouthed receptacle ready to accept the food as it came off the back of the tongue. Dr. Barclay described how this study had been carried out by *x*-ray observation, and mentioned that arrangements had been made to complete the investigation by research into the anatomical conditions that made this mechanism possible.

Dr. L. J. CARTER (Brandon), who followed, pointed out the difficulties of such an investigation owing to the exceeding rapidity of the first phase of the act of swallowing. He awaited eagerly the confirmation of Dr. Barclay's first statement that the first portion of the act of swallowing was due to a kind of vacuum in the laryngeal pharynx immediately preceding the reception of the food bolus. Dr. Barclay's work was an illustration of the progress radiology was making through the use of new instruments. This research had been made possible by the use of serial radiography, and by the adoption of the methods of the experimental physiologist. Radiology to-day was passing through a change similar to that which came to cardiology fifty years ago. It began with the fluoroscope and the radiograph; to-day we were using the moving picture and the method of the experimental physiologist. Mr. JOHN F. O'MALLEY (London) said he was of the opinion that the pharynx was a muscular sac held open by the hyoid, and that the tongue pushed food into it by a piston-like action. He had some doubt about the epiglottis folding over as was usually taught. He had pointed out some four years ago that in the human foetus at five months the epiglottis was in the nasopharynx, which was the position in the adult. The whale and alligator and such animals had no difficulty in swallowing without any falling over of the epiglottis. Mr. E. D. D. DAVIS (London) pointed out that the epiglottis was a vestigial structure which directed the air into the nasopharynx and nose, and became modified for the production of speech. The larynx was pulled up against the cushion of the epiglottis and the base of the tongue during swallowing. In his opinion the epiglottis did not fall over the orifice of the larynx. Removal of the leaf of the epiglottis did not affect swallowing in any way. He considered the act of swallowing demanded a combination of air pressure and muscular action, as shown by the inability to swallow in paralysis of the muscles of the pharynx. Dr. AUSTIN HAYDEN (Chicago) thought a cinematograph of the act of swallowing would be very instructive. Intra-oesophageal and intragastric photography should soon become an illuminating factor in the study of diseases as well as of the function of these organs. He said it was an interesting fact that the sword swallowers passed the sword through an absolutely immobile throat and oesophagus, and the ventriloquist could drink and sing simultaneously.

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## SECTION OF MEDICAL SOCIOLOGY AND HISTORY OF MEDICINE

*Wednesday, August 27th.*

### Migration Within the Empire.

THE President, Dr. JOHN D. COMRIE, took the chair, and briefly conveyed greetings from British medical schools, and from Edinburgh in particular, to Canada; he made mention of the influence of Scotland on the development of Canadian medical schools. Dr. T. C. ROUTLEY then opened the discussion on the first subject of the programme—namely, migration within the Empire. Dr. Routley emphasized the importance of the medical profession taking an interest in this subject, which required analysis; the main object was to establish and maintain a balance of population. A graph was shown giving evidence of the disturbed balance in the United States, and the speaker insisted on the necessity for securing a larger proportion of British stock to maintain the balance. The type wanted was the pioneer type, and the wisdom of the dole system was questioned as leading to deterioration of this. The treatment of the problem was a matter of supply and demand, but it must be intelligent. The formation of a national board was suggested to deal with population, and to study and make recommendations; an Imperial Board might be worth creating to take the matter in hand and gradually evolve an imperial scheme. Sir JAMES BARRETT combined his own remarks on the Australian problems with comment on Dr. J. S. PURDY'S paper, which, in the author's absence, was taken as read. The hope of world progress lay in the proper development of the British Empire. He explained the New Dublin League, and pointed out that migration was no solution of over-population, but only of the distribution thereof; conducted through the agency of churches it worked well. He gave an interesting account of the assimilation of the Maoris. Sir James then expressed strong views on the standards

adopted for migrants. He suggested that all that was necessary was a certificate from an approved board of examiners that the person was in such physical condition as not likely to become a burden on the country which he entered. A resolution to this effect was later adopted by the Section. He was also strongly of the opinion that no Governmental responsibility should be taken for a migrant after his arrival. He pointed out that tropical Australia could be populated by whites because there were no fatal indigenous diseases, there being no native population.

Dr. H. M. SPEECHLY then opened a discussion on juvenile immigration to Canada, giving what he called a clinical example—an account of the work of the Church Army and its hostel. Boys came from families, and had good references, but the medical examination was weak. The hostel was responsible for a boy for three years, or until the age of 20; they were placed with responsible farmers, and visited frequently. The importance of correct clothing was realized, and it was provided. Saving money was encouraged. A very interesting series of lantern slides was shown to illustrate stages of these lads' careers.

The PRESIDENT then declared the subject open for discussion. Dr. J. H. HARVEY PIRIE of Johannesburg said that their problem in South Africa was that of the whites holding their own against the blacks; quarrels among whites would settle themselves. Migration was outwards rather than inwards. White immigrants required to be possessed of enough capital for three to five years. No white races could establish themselves in tropical South Africa, but Dr. Pirie was prepared to believe the statement of Sir James Barrett that the existence of natives with indigenous diseases was responsible for this. The "poor white" question was largely a matter of diet, the present one of "mealies" being quite unsuitable. Dr. WARDELL (Moose Jaw) asked for a fuller discussion of economics, and thought it an unfriendly act on the part of Britain to buy Argentine wheat. He also pointed out the local difficulties of doctors in outlying districts. Professor J. W. CRANE (London, Ontario) gave an amusing account of the confusion with London, England, and reminded the Section that there was a Piccadilly and St. Paul's on this side. He thought Canada was losing graduates to America, and made a point of advising his travelling students not to choose the American nurses for wives, but to come back for Canadian ladies. Moreover, he always tried to get his graduates a post in Canada, and to ensure that they were helped. Dr. SPEECHLY, replying, thought 14 to 16 was the ideal age for immigration, and agreed with the dangers of unregulated immigration.

After the other openers had very briefly replied the PRESIDENT put to the meeting two resolutions—one favouring the establishment of an Imperial Board of Immigration, and the other the acceptance of a general certificate of fitness. Both resolutions were adopted, and referred to the secretaries for formulation and report to the Council of the Association.

*Thursday, August 28th.*

### FACTORS INFLUENCING HEALTH IN CANADA.

DR. JOHN D. COMRIE (President) again took the chair, and called on Dr. J. J. HEAGERTY (Ottawa), who said that the original title of his paper had been "Factors influencing the development of medicine in Canada"; he would try to correlate the two conceptions. In the course of a brief journey through the past, describing the passage of the St. Lawrence as an effort to reach Cathay, and mentioning the first medical treatment of the Indian chief Agontawa by the "laying on of hands" by Cartier, for paralysis, the speaker reached the onset of scurvy among the Indians. This disease spread to the whites, and in an effort to discover the cause the first necropsy in Canada had been performed in 1534. Cartier was made an Indian chief for the same reason as in the case of Lord Dawson on August 27th, 1930—namely, that he was a great healer. McGill University was built on the site of the first medical treatment in Canada. The Indian remedy for scurvy was found in a decoction of the bark and sap of the spruce tree, which quickly relieved the symptoms, but the disease continued as a scourge to succeeding expeditions, and small-pox came as an additional disaster; this last infliction, with alcohol and war, had almost exterminated the Indian. Interesting accounts of small-pox epidemics and their effect in antagonizing the Indians, of the records known as the "Jesuit Relations," of the very wide spread of the disease, and the introduction of vaccination in 1807 were given, also of the establishment of the Hôtel-Dieu in Quebec in 1639 by the Duchesse d'Aiguillon, niece of Cardinal Richelieu. The history and trials of this hospital were outlined. Its first surgeons had been "barber-surgeons," with no need for degrees or apprenticeship. Mention was made of Duchesne and Sarrazin, of the first appearance of medical art in 1750, and of the influence of the early physicians on the community. The founding of hospitals was then described, leading up to the present state of licensing and reciprocity, and the development of public health. In conclusion, the speaker foreshadowed special licensing requirements for specialization. Dr. SPEECHLY (Winnipeg) explained the confusion as regards titles mentioned by Dr. Heagerty. Sir JAMES BARRETT remarked that military campaigns were affected by disease more than was commonly realized. The first campaign conducted on the basis of health was that of Allenby in Palestine, where action was often only possible in the interval between infection by, and incapacity from, malaria. He referred to Cleopatra's warning to Antony not to attack Persia, because armies sent there did not return. He also commented on the fact that Cook went round the world free of scurvy, but his crews perished from malaria after reaching Batavia. The freeing of Jerusalem from malaria, the inscription of the Desert Mounted Corps on the Conqueror's Stone at Dog River, and the advisability of writing up campaigns from the medical point of view, were also noted. Professor CRANE (London, Ontario) mentioned Dr. Heagerty's book *Four Centuries of Medicine in Canada*, and the discovery in the Ottawa archives of a book presented by Jenner to the Five Nations. He pointed out that the whites had given to the world syphilis and civilization, and suggested the value which would attach to a book showing how disease changed history. Dr. T. C. ROUTLEY (Toronto) mentioned the lack of knowledge in England of Canadian conditions, though almost all the discoverers of Canada came from the Mother Country. Sir JAMES BARRETT spoke of the cairns erected along the route of discoveries in Australia; seven out of eight bore the names of people from the Old Country. Dr. MACKINTOSH asked about the origin and spread of tuberculosis, and Dr. HEAGERTY replied that no signs had been found in old bones to reveal how tuberculosis and all European diseases were common.

Dr. D. A. STEWART (Ninette) read a most interesting paper on the life of Sir John Richardson, surgeon explorer of the Arctic, and also sailor, naturalist, and scholar. His early life and "wisdom in the choice of his parents," with his many and wide enthusiasms, were pointed out. At the age of 19, when an assistant surgeon in the Navy, he had seen service against the French and Americans, and then became interested in exploring for the "North-west Passage"; he had joined the Franklin expedition in 1824. He became chief medical officer to the Royal Hospital at Haslar, and was one of the first to free insane people from the barbarous treatment then in vogue, by proving to the Admiralty that his methods were less costly. He took part in the search for Franklin, and was knighted by Queen Victoria. He personally knew Florence Nightingale, Thomas Carlyle, and Burns. Dr. HEAGERTY congratulated Dr. Stewart on his paper, describing it as replete with food for thought and interest. Sir JAMES BARRETT, remarking on the smallness of the world, mentioned that Franklin as a midshipman had climbed a hill at Melbourne, and again as Governor of Van Diemen's Land, before leaving ultimately to disappear in the Arctic. Sir James also proposed that in the best interests of medical education the Section should recommend that the history of medicine ought to be a subject for all higher degrees or qualifications. This was carried unanimously. Dr. GORDON BAKER thanked the readers of papers; he expressed the view that study of this subject would tend to prevent a tendency to sectionalism, which he thought was becoming apparent.

British Medical Journal.

SATURDAY, SEPTEMBER 20TH, 1930.

## THE WINNIPEG MEETING.

THE Annual Meeting of 1930 will be memorable for many reasons. It is one of the three occasions on which the Association has met outside what is still medically the United Kingdom, and it is the third Annual Meeting held in the Dominion of Canada. The warmth of the welcome given to the Association can hardly be overstated, and the event has been everywhere regarded as one of high moment. The evidence supporting these propositions was by no means confined to the medical profession. On the contrary, it has been abundantly supplied by the most distinguished representatives of the Federal and Provincial Governments, and by the municipalities and citizens in all places visited by the Association. The visit to Canada has indeed been interpreted as possessing a note and quality of patriotism, and has been welcomed as an expression of cordiality and good feeling between peoples who share a common tradition and a common loyalty, and look with confidence also to a common future. It may be accepted as certain that, other values apart, the British Medical Association is widely credited with large and worthy motives in its decision to travel to Winnipeg for its Annual Meeting. Another certain conclusion is that the habit of reciprocity will be encouraged. The centenary meeting of 1932 will, in any event, attract many individual visitors from the Dominions, and it may be well to consider without delay the possibility of some comprehensive official invitations. British hospitality has received a fair challenge and must use its opportunity in no grudging fashion. Even further, the experience of 1930 must be added to other events which emphasize the importance of multiplying personal contacts between members of the Association in the various parts of the Empire. Manifestly the Association can only on rare occasions cross the seas for its annual meeting, but official delegations will be more and more earnestly desired in the Dominions, and both for these and for the reception of delegates in the home country adequate provision must certainly be made. If Winnipeg has not exactly set the ball rolling she has certainly contributed an added impetus.

We have already begun publication of reports of the technical or strictly professional activities of the Annual Meeting; here it is sufficient to say that many important communications were made in the various Scientific Sections, that the attendance of members was rather above than below the average, and that the reports printed in the local press were creditably accurate as well as full. The proceedings were clearly recognized to be of great public interest. Naturally this was particularly true of the larger and semi-public functions. At the adjourned general meeting a telegram of welcome and good will from Lord Willingdon, the Governor-General of Canada, was read, and a suitable reply from the President was warmly endorsed by the audience. Cordial and inspiring speeches were delivered from the platform by the Hon. John Bracken, Prime Minister of Manitoba, and by Lieut.-Colonel Ralph H. Webb, the Mayor of Winnipeg, who presented a flag of the city to be placed in the Great Hall of the Association. The new President in his address commanded the attention of a large audience, and he was received with much enthusiasm. Interesting features included in the ceremony were the investiture of new officers with their appropriate badges, the introduction of foreign delegates and of delegates from the Dominions and Colonies, and of Dr. Alex. D. Blackadder of Montreal and Sir Ewen Maclean as Vice-Presidents; while the reception given to the Most Rev. Samuel Pritchard Matheson, D.D., Archbishop of Rupert's Land and Primate of All Canada, and to Mr. Thomas Bassett Macaulay, LL.D., showed a cordial local approval of the action of the Association in adding these names to the list of its Honorary Members. Besides the official representatives already mentioned the platform party included the Hon. J. D. McGregor, Lieutenant-Governor of Manitoba, the Hon. Dr. Egbert, Lieutenant-Governor of Alberta, and the Hon. E. W. Montgomery, Emeritus Professor of Medicine and Minister of Health and Public Welfare for Manitoba.

A feature of special distinction in the programme was the religious service, and no one who took part in this is likely to forget it. Processions of the British and Canadian doctors and of visitors were organized at headquarters and marched through crowded streets to the picturesque square in front of the stately Legislative Building of Manitoba. Having passed to their places members saw in front of them effectively arranged groups of naval cadets, boy scouts, hospital nurses, ex-service nurses, and immigrants from Iceland and other countries in their picturesque national dresses, the whole, including members in their academic robes, forming an attractive and inspiring scene. The setting was most artistic and the stage management admirable. It is noteworthy that the "committee" to whom the organization of this function was committed consisted of one man, Dr. H. M. Speechly, who proved himself more than equal to the occasion and received thanks and congratulations from all quarters. The service was conducted by Archbishop Matheson, the Lesson was read by the President of the Association, and the music was rendered by the band of Princess Patricia's regiment under the direction of Captain I. W. James. On the way to the religious service the procession halted while the President, on behalf of the Association, placed a wreath at the base of the Cenotaph, and everyone stood to attention while a bugler sounded the "Last Post." Winnipeg may claim an Annual Meeting with many features having an individual quality, and high among these must be placed the outdoor religious service held in picturesque surroundings and organized with delicate and artistic skill. Effective management was shown also in many other directions, and particularly in the arrangements for the official dinner, where some 1,600 persons found their places without difficulty and enjoyed the benefit of a prompt and admirable service; it was a triumph of organization. The company enjoyed a brilliant speech from Lord Moynihan, who proposed "The Empire," and a happy and characteristic contribution from Sir StClair Thomson, who submitted the toast of "The Guests," while Mrs. Harvey Smith gaily responded for "The Ladies," proposed by the Past-President, Professor Burgess; an effective acknowledgement of the toast of "The Association" was made by Dr. Brackenbury.

Winnipeg has yet to build its worthy university ceremonial hall, but as it has made an attractive and flourishing city out of the prairie in the course of fifty to sixty years, there can be no doubt of its capacity for academic and other developments. In the meantime the convocation for the conferring of honorary degrees was held in the Winter Club and was a very impressive ceremony. A special welcome was given to Dr. T. Willis Prowse, Dean of the Faculty of Medicine in the University of Manitoba, in recognition of his successful efforts to raise to a university level the teaching in the medical school. Lord Dawson of Penn acknowledged, on behalf of the new honorary graduates, the courtesy of the university, and spoke of the common interests of the home country and of Canada. On the last evening of the meeting was the Listerian Oration, which, delivered by Lord Moynihan, drew a crowded audience, and will certainly take a worthy place in the numerous tributes paid to the fame of the great English surgeon. The chair was appropriately taken by Dr. John Stewart, Emeritus Professor of Surgery, Halifax, Nova Scotia, who was at one time house-surgeon to Lister, and was himself the Orator when the Canadian Medical Association met at Ottawa in 1924. Not the least pleasing of the various ceremonies was the gift to the British Medical Association of a buffalo head as a souvenir of the Winnipeg Meeting, and added significance will be found in the fact that the presentation was made by the Hon. R. B. Bennett, K.C., Premier of Canada. Of many other ceremonies, including the one that made Lord Dawson into an Indian chief, we can only say that they were admirably planned, and were carried out with genial and hearty good will. Hospitality, both official and personal, reached its farthest possible bounds, and was given not only generously but gladly; guests found hosts who were obviously pleased to offer a full welcome. The President and Mrs. Harvey Smith and their numerous colleagues, lay and medical, are to be congratulated on a great success; they have contributed a special and distinctive record in the history of the British Medical Association.

## THE MENTAL TREATMENT ACT, 1930.

In the realm of psychological medicine the outstanding event of the past twelve months was the introduction, by the Government in November, 1929, of the Mental Treatment Bill, which received the Royal Assent and became an Act of Parliament on July 10th, 1930. It is natural, therefore, that the Commissioners of the Board of Control should have chosen to devote the introductory section of their latest annual report[1] to an explanation and appreciation of the provisions of this Act. The Commissioners believe that this measure will come to be regarded as a great landmark in the history of legislation dealing with the treatment of mental disorder. The new Act for the first time authorizes the reception of voluntary patients into public mental hospitals. It is earnestly hoped that local authorities will realize that, from the point of view of both humanity and economy, treatment cannot begin too early, and that they will therefore see that any charge made for the reception of voluntary patients shall not be such as to discourage admissions in the incipient stages of the disease.

An even more important feature of the new Act is the provision for temporary treatment of non-volitional patients, on the "recommendation" of two medical practitioners and without the intervention of any judicial authority. In the Board's opinion this is an epoch-making change; but it will fail of its full effect unless local authorities rise to the measure of their new opportunities. It is of the utmost importance that the non-volitional patients, whose prospects of early recovery may be favourable, should have a chance of escaping the supposed stigma of certification. But the change will become a mere alteration of label, a mere detail of nomenclature, if patients, under the new procedure, are to be warded indiscriminately with certified chronic cases. The new provision is based on an implicit understanding that local authorities will provide, as many have already done, a separate admission hospital, equipped with modern therapeutic resources and supplemented by adequate convalescent villas.

The Board of Control welcomes also the provision whereby it has power to approve institutions and hospitals, other than mental hospitals, for the reception of voluntary and non-volitional patients. There are many smaller general hospitals which do not possess either the staff or the equipment desirable for the treatment of any form of mental disorder; and in any case the Board does not expect that voluntary hospitals will, in general, be prepared to receive into their ordinary wards patients who might be disturbing to others. But there are many cases which could, with advantage, be treated in teaching hospitals and in those non-teaching hospitals which are large enough to have wards for nervous and mental disorders. In the case of the teaching hospitals, such an arrangement would be of special value, not only from the point of view of the patient, but in the interests of medical and nursing education. At present the amount of teaching which the undergraduate student receives in psychiatry is lamentably inadequate, though it cannot be appreciably increased without adding to a curriculum recognized as already overloaded. But the admission of suitable cases to neurological and mental wards of teaching hospitals would, in the Board's opinion, provide favourable opportunities of experience to the student without any addition to the present curriculum. The Board, however, points out that if developments on these lines are to be successful, the staff of the mental hospital should be associated with any treatment given at the voluntary hospital. Association between the two will be beneficial to both, for the advancement of medical knowledge is only hampered by the treatment of mental and physical diseases in watertight compartments instead of in relation to one another.

Another change of great importance to which the Commissioners' report draws attention is the statutory recognition of the out-patient clinic for patients suffering from mental illness. Authorities are now empowered to provide such a clinic and arrange for its provision with the voluntary hospital of the area. There are obvious advantages in conducting an out-patient clinic as a part of a voluntary hospital. Patients in the earliest stages of mental instability will more readily resort to a centre which is not definitely associated in their minds with mental disorder, while other patients who are in need of treatment by a psychiatrist, though they themselves do not realize their need, will come under the notice of the medical staff in the ordinary course of their work. It is essential to the success of voluntary treatment in the early and hopeful stage to secure the patient's confidence and co-operation, and the Board does not believe that

[1] Sixteenth Annual Report of the Board of Control for the year 1929. Part I. H.M. Stationery Office. 1s. 9d. net.

full advantage will have been taken of these new provisions for voluntary patients until every area has its out-patient centres.

These and many other matters relating to administration are discussed in a long memorandum on the Mental Treatment Act, 1930, which the Board of Control has prepared for the guidance of local authorities, and of which an account will be found in the *Supplement* at page 139. We may remind readers here that the Act comes into force on January 1st, 1931, with the exception of Sections 15 (2), 16, 18, and 19, which became operative when the measure reached the Statute Book on July 10th last. Of the sections which are already in force No. 16 is the most important, for it amends Section 330 of the principal Act of 1890, so as to afford to persons administering the Lunacy Acts and the new Act further protection in regard to actions at law. It should be noted, however, that this new provision does not affect any proceedings which were pending when the Act became law.

## EXPERIMENTS ON ANIMALS.

ACCORDING to the Home Office annual report[1] just issued 403,141 experiments were performed on living animals during the year 1929, being 87,250 more than in 1928. Of this number 8,526 were performed under licence alone, or under certificate C, and therefore came under the provision of the Act—that the animal shall be completely under the influence of an anaesthetic throughout the whole of the experiment, and be killed if it has suffered any serious injury, or if the pain is likely to continue after the effect of the anaesthetic has ceased. In addition, 10,693 serious operations were conducted under certificate B, which exempts the person performing the experiment from the obligation to cause the animal to be killed before it recovers from the influence of the anaesthetic. In such case it is generally essential for the success of the experiment that the wound should heal cleanly, and the surrounding parts remain in a healthy condition. After the healing of the wounds the animals are not necessarily or even generally in pain. The significance of these figures will be the better appreciated when it is realized that a certificate dispensing entirely with the use of anaesthetics is never given for any operative proceeding more severe than subcutaneous venesection. The great majority of the experiments (383,922) were conducted under certificate A, which is granted only with respect to procedures that are attended by little or no pain—for example, inoculations, feeding, the administration of various substances by the mouth or by inhalation, or by external application, or the abstraction of blood by puncture or simple venesection. The following "pain condition" is attached to the licence in respect of all experiments under either certificate A or B: If an animal at any time during any experiments under these certificates is found to be suffering pain which is either severe or is likely to endure, and if the main result of the investigation has been attained, the animal shall be painlessly killed at once; similarly it shall be immediately killed without pain if at any time during the experiments it is found to be suffering severe pain which is likely to endure, or if the inspector directs that it shall be destroyed. The returns show that during the year under review 20,098 experiments were made in the course of cancer investigations; of these, 1,854 were performed under an anaesthetic, and 18,244 without. Most of the latter were inoculations into mice or irradiation experiments. Many of those performed under certificate A were carried out on behalf of official bodies, with a view to the preservation of the public health or for the diagnosis and treatment of disease. Only one irregularity was reported during the year—that of the holder of a licence who exceeded his powers by performing certain experiments on rabbits. This infringement of the regulations was committed through inadvertence, and the person concerned was admonished.

[1] London. H.M. Stationery Office. 1930. 1s. 3d. net.

## FROM CHINA TO PERU.

THE Assembly of the League of Nations opened later than usual this year (writes our correspondent from Geneva), for the reason that the first week in September, hitherto the date for its commencement, has been found unduly to cut short diplomatic vacations. It is meeting in a much more dignified setting than formerly, the stately Electoral Palace having superseded the shabby Reformation Hall. The first days of the session were devoted, as usual, to a discussion on the report of the work of the League since the last Assembly, which affords an opportunity to delegates to ascend the tribune and talk on any subject under the sun. Only the threat of the president that he would have to call for night sittings slackened this preliminary volume of oratory. The report which is under discussion devotes a large amount of its space to the work of the Health Organization, which is one of the most extensive and successful branches of League activity. A good deal of work has been done during the past year in collaboration with the National Government of China. A detailed survey of the health conditions obtaining in certain Chinese ports has been made at the request of the Ministry of Health of the republic, and recommendations with regard to port health services are expected shortly to be forwarded from Geneva to Nanking, the Government headquarters. The Health Organization also recently sent to China Dr. Knud Faber, professor in the medical faculty at Copenhagen University, with a view to studying the conditions of Chinese medical education. Dr. Faber is to make a report on which the Health Committee of the League will base certain recommendations to the National Government. Another piece of work relating to China is the calling of conferences of authorities concerned for the control of small-pox and cholera in the area of Shanghai. As a result, a general programme of vaccination and anti-cholera inoculation has been agreed upon, mobile and stationary dispensaries to carry on the work have been set up in the municipalities, and large numbers of persons most exposed to these diseases have been protected. The head of the medical administration of the Chinese Ministry of Health has been visiting Europe and America studying public health work according to a programme arranged by the Health Organization of the League; Great Britain has been one of the countries visited. Among other matters to which briefer reference is made in the report to the Assembly is the work which is being done on serological and biological preparations. A laboratory conference on blood groups was held in Paris in July, when a series of resolutions on the standardization of iso-agglutinating serums and on nomenclature was adopted. Another laboratory conference on the sero-diagnosis of syphilis was held at Copenhagen in August. The work of this conference began with a joint examination of twenty-six samples of serum provided by the Danish State Serum Institute. The serums were examined by six groups of investigators using five flocculation methods and two modified Wassermann reactions. It was agreed that, while the small number of tests did not permit the drawing of definite conclusions concerning one or the other method, the flocculation methods as used to-day had a high degree of sensitiveness and of specificity. The expert work on syphilis and cognate subjects is proceeding, and no fewer than 23,500 records

of cases of syphilis have been collected by the experts responsible for the inquiry which is going forward in Great Britain and four other countries under the auspices of the Health Organization. Miss Susan Lawrence, Parliamentary Secretary to the British Ministry of Health, who is one of the delegates of the British Government, has been appointed rapporteur on health questions to the Assembly. Sir George Buchanan and Dame Janet Campbell, of the Ministry of Health, are in attendance as technical experts. Among the delegates of other countries are several medical men—the Hon. Philippe Roy for Canada, Dr. Chodzko for Poland, Dr. Primelles for Cuba—and one medical woman, Mme Ingeborg Aas for Norway.

## DR. WILLIAM HARVEY.

THE catalogue of "Old Medical, Botanical, Chemical, and Alchemical Books" lately issued by the Internationaal Antiquariaat at Amsterdam, shows how rapid has been the rise in value of all books bearing upon the history of medicine. Fifty years ago they were usually found in the "twopenny box" outside the shop; twenty years ago a copy of Harvey's *De Generatione* in the English translation of 1653 could be bought for two or three guineas. It is now priced at 400 guilders, "a good copy, quite complete except for the portrait which is missing. Some upper margins are stained and tender." To enhance its value the old story is told that only 150 copies were printed, and of these a fire destroyed 115. The story is demonstrably false. The edition may have been a small one, and some of the copies were perhaps destroyed accidentally by a fire at the publishers', but there are certainly more than fifty copies easily accessible at the present time. There are still many points to be cleared up about the earlier editions of Harvey's treatises. Why did he, a lover of all things beautiful, and an acknowledged connoisseur of art, send the manuscript of the *De Motu* to be printed at Leipzig—on such poor paper that it is now perishing—by a printer of no scientific reputation, and allow it to be issued without the author's corrections? It could all have been done much better in London, where he was living. The answer generally given is that Leipzig was the centre of the book trade, and that he hoped from there to make his discovery known more widely and more quickly. Was this the real reason? Was it not perhaps because he feared the storm which it would have raised at home; or was it, as he declares in his eighth chapter, that "I not only fear injury to myself from the envy of a few and tremble lest I have mankind at large for my enemies"? A bibliographical mystery also attends the 1649 Cambridge edition of the *De Circulatione Sanguinis*. Why was the title-page cancelled? and why, when it had been cancelled, was the new title-page so incorrect that a space is left for a missing word in the first issue, and what was that word? The space has been closed up in the second issue, without the insertion of any additional word. In like manner, what regulated the presence or absence of Harvey's portrait in the English translation of the *De Generatione*? In its earliest state the bust is a fine copperplate engraving by the elder William Faithorne (1616–91), who knew Harvey personally, and was himself one of the most distinguished engravers and portrait painters of his age. It represents Harvey at the age of 65 or 66. Collectors of engravings who had no use for the book itself have undoubtedly removed many of the portraits for their collections; but other copies were as certainly issued without the portrait, and in yet others the portrait has been added long afterwards when the plate had become worn and blurred. The original copperplate is still in existence, and is in the possession of Dr. Sidney H. Badcock, who had the good fortune to find it in London a few years ago.

## PATHOLOGICAL AND BACTERIOLOGICAL LABORATORY ASSISTANTS' ASSOCIATION.

THE third triennial conference of the Pathological and Bacteriological Laboratory Assistants' Association was held in the Medical School of the University of Manchester from August 25th to 29th. Professor W. H. Lang, F.R.S., Pro-Vice-Chancellor of the University, in an opening address, extended a hearty welcome on behalf of the University of Manchester, and remarked that he had spent the greater part of his working life in Manchester and in laboratories and laboratory work. Until the present occasion, however, he had never fully appreciated the importance and the essential nature of the part of the laboratory organization which the conference represented. He had owed much in his scientific working life to skilled assistance, not merely as regards the organization of practical teaching, but still more in respect of the higher developments in laboratory work and investigation which tended to the amassing of new knowledge. He thought that the Laboratory Assistants' Association had been planned on extremely broad lines, especially in the case of its aims and its methods for securing improvement in status. Valuable features of the association were its concentration on the improvement of technical skill by training and diffusing knowledge, the organization of meetings and conferences, and the great services rendered to scientific investigation and the advancement of technique, as illustrated by its journal, setting a useful example to similar groups in kindred sciences. On August 27th meetings were held in Liverpool. Professor W. Blair Bell offered a welcome on behalf of the University authorities, and acknowledged his own debt to skilled laboratory assistants. He particularly emphasized the value of such conferences, where members could meet and discuss their difficulties and opportunities with each other. He urged the junior assistant to acquaint himself with the knowledge obtainable in a small laboratory, thereby fitting himself for the larger laboratory, and to obtain the association's certificate in technique, which was the hall-mark of the skilled assistant. He then gave a most interesting lecture on laboratory research in cancer. The conference dinner was held in the refectory of the University of Manchester on August 28th, the principal guests being the Pro-Vice-Chancellor, Professor A. E. Boycott, and Drs. D. Stewart, W. Susman, and A. F. C. Davey. During the evening the Sims Woodhead memorial medals were presented to Professor A. E. Boycott, F.R.S., and Mr. W. A. Mitchell (Cambridge) for conspicuous service to the association, especially in its earlier days when it was essential to win the sympathy of the laboratory chiefs. In this respect Professor Boycott had been a most valuable friend, and Mr. Mitchell, working from the side of the assistants, had brought sound judgement to bear in helping to frame a constitution. Professor Boycott, in reply, expressed his pleasure at receiving the medal, and recalled the years he had spent at the University of Manchester; one fact firmly fixed in his memory was the essentially practical conception and the sound basis on which the association was formed. He was glad that his position as secretary of the Pathological Society of Great Britain and Ireland at that time had allowed him to dispel fears that the newly formed association would trespass on the activities of that society. The examination scheme was a culmination of the practical ideals which had always characterized Mr. Norman and Mr. Mitchell. The mornings of the conference were devoted to lectures and papers; an exhibition of laboratory work and apparatus was displayed in the Histological Laboratory. The attendance at the conference was representative of this widespread organization, members coming from Uganda and North and West Ireland, as well as from all parts of England and Scotland.

### THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS.

WE publish in the *Supplement* this week (p. 141), at the request of the Registrar of the General Medical Council, a list of the names of those medical practitioners who have not replied to his inquiries as to the accuracy of their postal addresses. Any practitioner whose name is included in this list should communicate at once with the Registrar of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1, or, in certain specified cases, with the Registrar of the Scottish Branch Council, 12, Queen Street, Edinburgh.

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THE next meeting of the International Association of Surgery will be held in Spain in 1932, when the following subjects will be discussed: treatment of intraspinal tumours, non-tuberculous pulmonary suppuration, and surgery of the oesophagus.

## ARSENIC IN SWEETS.

### A REPORT ON THE STOKE CASES.

THE following note on the recent outbreak of poisoning in sweets contaminated by arsenious oxide has been contributed by Dr. A. Wotherspoon, medical officer of health for the city of Stoke-on-Trent.

On September 2nd, 1930, notice was received at the Health Department from Dr. Glass, a general practitioner in the Norton district of Stoke-on-Trent, that some twelve children in his practice had been taken ill after eating certain sweets. Inquiries were at once set on foot, and it was discovered that all the sweets had been purchased at a shop in the neighbourhood. The particular sweets were cough-drops, and had caused twelve children to be ill shortly after eating them. The symptoms in every case were the same, and came on from one to two hours after eating one or more of the sweets. Everything pointed to some irritation of the stomach, followed by vomiting, which, in the mildest cases, lasted from six to seven hours.

The suspected sweets were sent off the same day for analysis, and a wire was received the following day stating that large quantities of arsenic had been found in them. Just previous to receiving the wire from the analyst the medical officer for the Congleton Urban District telephoned to say that he had had similar cases of poisoning in his district due to consuming cough-drops, and after submitting samples to the Ministry of Health had heard that they contained arsenic.

The premises of the wholesaler were visited, and it was found that the sweets had been manufactured by a Stoke-on-Trent firm. The factory, which was a small one, was next visited, and the proprietor was questioned as to the ingredients of the cough-drops. These were given as follows: White sugar, brown sugar, glucose. Flavouring consisted of paregoric, oil of peppermint, oil of cloves, horehound essence, eucalyptus oil, and oil of aniseed. The proprietor, in the course of conversation, said that the cough-drops manufactured on August 27th had not been made by him but by another sweet-boiler, as he himself had been ill. He also said that this same man had brought a bag of dusting powder to the works a week previously, which he had purchased.

Samples of all the ingredients were taken, including the white powder brought by the man who made the boiling of the cough-drops and some other sweets on the 27th. This man, in interview, gave the same ingredients already mentioned by the proprietor as those he had put in the cough-drops. The following morning, September 5th, the works were again visited by myself and Dr. Monier-Williams from the Ministry of Health, and further samples of everything likely to contain arsenic were taken. Up to this date no cases of illness had been reported or suspected from any other type of sweets from the factory, but on September 6th some cases were heard of from other sweets —namely, mint rock—and the whole of the sweets made at the works after August 27th—the date on which the poisoned boiling was made—were seized.

On September 8th a wire was received from the Ministry of Health to say that the dusting powder sold to the works on August 18th was pure arsenious oxide. This being the case, all sweets made after August 18th, the date the powder was taken to the works, were then recalled, and the works sealed up until such time as an analysis of all the substances in use there had been made and pronounced free from arsenic.

The extraordinary thing about the whole case is the fact that there have been no deaths, possibly because the large quantities of arsenic caused vomiting, and so were expelled from the system before further absorption had taken place. The quantities of arsenic varied in the several analyses carried out from 77 to 150 grains in every pound of sweets. Some of the sweets contained as much as two-thirds of a grain in each one, and there were about five sweets to an ounce, which could be purchased for a halfpenny. There were no further cases after Saturday, September 6th, so far as the Health Department is aware, except for one child who was given a sweet purchased several days before. The question as to how the man who sold the arsenic, which was pure arsenious oxide, came to have it in his possession is now a police matter, but it would suggest that some tightening of the regulations concerning the sale of arsenic is necessary, as I am informed that one can purchase large quantities from colour merchants and manufacturers with little or no trouble. The difficulty in tracing the source of the bottles of sweets was greatly hampered by the lack of book-keeping on the part of the manufacturer and the wholesalers. The enormous quantities of arsenic used as a dusting powder in the process of manufacture had also permeated almost all the ingredients in the works, and arsenic has already been found in quite large quantities in treacle and several other substances.

The source of the arsenic which was sold as dusting powder to the manufacturer has been found to be from a box of pure arsenious oxide found on the engineering works where the man who made the boiling for the factory had resided. The explanation of its presence on the works was that it had been left there by a previous lessee of the works, who made enamel letters for shop windows. This man is now in America, so it has not been possible to trace where the arsenic was manufactured. The whole of the arsenic is now being destroyed, so that no further cases can arise from this source unless from sweets already purchased of which the Health Department is unaware.

The lesson of the whole case would seem to be that there should be more control over all premises where food or sweets of any kind are manufactured. Such premises can always be entered by a medical officer of health or his representative, but the existence of such premises is often unknown, and I would suggest that notification of the commencement of such a business should be made to the authorities. Another point of extreme importance is the ease with which large quantities of arsenic can be purchased from manufacturers such as colour merchants, and over the sale of which the police have no control. Further, it seems that some legislation is necessary to prevent a case like the present, where a manufacturer on vacating the premises can leave a large amount of a deadly substance such as arsenic without any label or means of telling its noxious nature. Surely such deadly poisons should never be lost sight of, but should be returned to the manufacturer or their presence reported to some authority. I would suggest that the attention of the Home Office should be called to such a situation, which could obviously arise on some other occasion.

As I have already stated, the circumstance that surprised me more than any other was that there were no deaths, in spite of the fact that these sweets, heavily contaminated with arsenic, were sold at one halfpenny an ounce. The manufacturer and his son have both suffered severely from the effects of the arsenic—irritation of the skin, especially on the hands, forearm, and face, as well as pains and diarrhoea due undoubtedly to eating food with hands contaminated during the making of the sweets.

# THE BRITISH ASSOCIATION.

## ANNUAL MEETING IN BRISTOL.

(*Concluded from page 441.*)

SEVERAL topics of direct or indirect medical interest were discussed during the annual meeting of the British Association at Bristol, which terminated on September 10th. We referred last week to the two presidential addresses in the Sections of Physiology and Psychology respectively, and it is not possible to do more than indicate certain other topics which were dealt with. In the Section of Psychology Professor C. W. Valentine devoted himself as president to the consideration of the psychology of early childhood, and some kindred aspects of this subject received detailed attention later.

### *The Pre-School Child.*

In the Section of Educational Science Miss Margaret Drummond urged the necessity of a healthy educational environment for the early years of life. Solution of the housing problem, even associated with the training of the ignorant mother and her freeing from other responsibilities in order that she might attend to her children, was not in itself an adequate measure, for the 3-year-old child, like his older brothers and sisters, had needs which no mother could fully satisfy. A child's development should be continuous, and be safeguarded from sudden changes in environment—as, for example, an abrupt transition from the nursery school freedom to the cramping and deadening mass instruction provided in many infant schools. Dr. W. E. Blatz described the methods adopted in the clinics and schools of Toronto to keep children off the "psychological rocks." He said that the background of personality was laid down in the first five or six years of life in the winning of control over attitudes, appetites, and emotions. The mother of a child in the Toronto nursery school attended courses in parental education for three years. Dr. J. A. Hadfield (London) show how false attitudes to life adopted in the pre-school period resulted later in adult abnormalities of character and personality. Prevention of these faults was obviously better and easier than their cure. Full and harmonious expression of the child's personality in legitimate accordance with its environment was essential to health, and could be achieved by the fostering of the quality of self-discipline, which was latent in every child. The imposition of ideals, such as discipline and considerateness, qualities desirable in themselves, might easily lead to mental morbidity; no discipline was of any value which did not lead to self-discipline. Mrs. S. Isaacs discussed the relation between thought and fantasy in young children.

### *The Psychology of Adolescence.*

Various aspects of this subject were dealt with by speakers. Professor Olive Wheeler defined three emotional developments characteristic of this period—namely, the increased feeling for self, tending to the development of psychological independence, and the finding of a vocation; the appearance or intensification of sexual emotions, tending to the development of hetero-sexuality and finding a mate; and the evolving of social, aesthetic, and religious emotions, leading to the formulation of a working philosophy of life. Variations occurred among normal adolescents as regards the time and rate of emotional developments, the relative emphasis laid on differing ones, and the "conflicts" which might ensue. Moreover, environmental influences had their part to play; the family circle, educational institutions, modern industrial difficulties, and religious organizations might have good or bad results as regards the developing personality and the physical and mental health.

Dr. R. G. Gordon emphasized the importance of problems of adjustment being tackled healthily, and outlined the way in which introversion should proceed to extraversion, the quality of the social being. He then dealt with the herd instinct, the ill-defined instinct of suggestion, primitive sympathy and imitation, and the sex instinct; these three had to be integrated with each other, and with other emotional dispositions as well as with physical factors. Study of the mental defective, Dr. Gordon remarked, supplied a slow motion picture of the development of the social self. Such a defective did not lack any of the instinctive bases of the social self, but he was deficient as regards integration, discrimination, and control, and therefore in the power of social adjustment. These missing functions were cortical in nature, and the ament lacked an efficient cortex. Hughlings Jackson's work had revealed how the cortex was concerned with control, Sherrington had shown how it was involved in integration, and Head had illustrated the faculty of discrimination. These functions were related to adaptation, which could only be achieved by a fully developed cortex. Recent work by Drs. Gordon and Thomas had thrown light on the continued development of the mentally defective, and the late adjustment to social conditions made by backward children. Amentia was not solely deficiency of intelligence; it included a group of cases showing deficiency in social adjustment, and divisible into those who compensated by excessive egocentricity (often epileptic), and those who were generally inefficient (psychasthenic). All psychoneurotics were not defective, but many of those regarded as psychoneurotic were really suffering from a degree of amentia. Miss A. H. McAllister described the adolescent modes of thinking, and Miss M. Phillips discussed the adolescence of the wage-earner.

### *Psychology of the Tuberculous Patient.*

Dr. H. Banister, in a paper dealing with the mental effects produced by tuberculosis, described the discoveries which had been made at the Papworth Village Settlement. Tuberculosis had there been shown to be not necessarily hereditary, and even though 173 children had been born there of tuberculous parents, and had lived the ordinary family life with them, not one had contracted the disease. He did not agree with those who assumed that genius was one of the products of tuberculosis, though to be crippled by the disease might supposedly give rise to imaginings of what might have been the career otherwise, such imaginings being the very essence of the art of romance. The "spes phthisica"—the planning of grandiose schemes by the obviously moribund—was less usual than was generally believed, and constituted a state of dissociation. Similar dissociations were fairly common, forming the basis of many novels; in the consumptive the patent fact that he was doomed to early death might be concealed from him by an unconscious process of this kind. Such a hopeful mental attitude might promote cure in cases of less severity. The patient must be shown that life was still worth living, though not on the scale previously planned. Such considerations offered a possible explanation of the fact that the expectation of life at Papworth was about three times that given by ordinary sanatorium statistics. It had to be remembered that the patient was not cured when he left a sanatorium; the disease was only arrested. Moreover, he might be going back to the very environment in which he had broken down, and the worry and difficulties consequent on his return were bound to bring about relapse eventually. After the arrest of the active process the patient should adopt suitable work under adequate medical supervision; this was the line on which the Papworth treatment proceeded.

### *Colours and Colour Vision.*

Dr. J. Drever, in the Section of Physiology, opened a discussion on the definition of primary colours, showing that there were four different view-points in this respect—namely, those of the artist, the physicist, the physiologist, and the psychologist. While the artist and physicist applied the same logical principle of classification—the admixture of three pigments or lights—the psychologist and physiologist maintained that colour was a phenomenon pertaining to their special sciences. Standardization by wave-lengths offered a better basis for classification, and it would be well to discontinue use of the undefined term "primary." Professor H. E. Roaf discussed the mode of production of colour sensation, with special reference to the histological structure of the human and avian retina. Dr. R. J. Lythgoe suggested a correlation of the different standpoints. Dr. F. W. Edridge-Green read a paper on pseudo-isochromatism and the detection of colour-blindness, and

reported the results obtained by an examination of cases at the Board of Trade. He concluded that a test for a dichromic would not necessarily detect a trichromic who had the three colour sensations—red, green, and violet—but no yellow sensation, and who was obviously dangerous, as was shown by the lantern and spectrum tests. He emphasized the value of his own "card test" in this connexion. A test which was difficult for the normal sighted was not necessarily so for the colour-blind. In fact, a test might be constructed which could be passed by the colour-blind but not by those with normal colour vision.

*Chemotherapy.*

In the two Sections of Chemistry and Agriculture attention was paid to the value of chemotherapy in human and veterinary medicine. The President of the latter Section, Dr. P. J. DuToit, in his address on veterinary science and agriculture, reviewed the notable advances made in recent years, with special reference to trypanosomiasis and its arsenical treatment, and the piroplasmoses, such as redwater and biliary fever, which yielded to trypan blue. In the Section of Chemistry Dr. A. J. Ewins read a paper on the application of arsenicals to tropical medicine, and Dr. H. King described the mechanism involved in the action of these substances. Dr. T. A. Henry described the derivatives of quitenine. A discussion on the present position of the dyestuff industry in the same section was opened by Professor A. G. Green, F.R.S., who gave an account of the advances made since 1914, and eulogized the Dyestuffs (Import Regulation) Act which came into force in January, 1921.

# Ireland.

### Northern Ireland Insurance Act.

THE National Health Insurance Act, which received the Royal Assent at the close of the last session of the Parliament of Northern Ireland, established a scheme of medical benefit for persons insured under the national health insurance scheme. All persons who are insured under this particular scheme, with the exception of voluntary contributors whose incomes exceed £250 a year, and a limited class of deposit contributors, will be entitled to medical benefit, which begins on October 1st, 1930. Unlike the cash benefits under the health insurance scheme, medical benefit will not cease at 65 years of age, but will continue for life. Every qualified medical practitioner in Northern Ireland is entitled to undertake the treatment of insured persons, and a list will be prepared by the Ministry of Labour, the Government department responsible for the administration of the scheme, showing the names and addresses of the doctors who have agreed to do so. This list will be compiled by county areas, and the appropriate district list will be displayed in employment exchanges and post offices. Any insured person is entitled to choose as his doctor any doctor practising in his district whose name is on the list, and who is willing to accept the insured person as a patient. During the next few weeks the Ministry of Labour will send a medical card to every person entitled to medical benefit. This card, besides being proof of title to medical benefit, should be used by the insured person when selecting his doctor. He need only take the medical card to the doctor of his choice, who will send it to the Ministry of Labour as a notification that he has accepted the applicant as a patient, and the card will then be returned by the Ministry of Labour to its holder. As a consequence of the introduction of medical benefit, sanatorium benefit will cease to be one of the benefits under the national health insurance scheme after September 30th, 1930; from that date the County Insurance Committee will cease to exist. Insured persons suffering from tuberculosis, who are now being treated in their own homes under the sanatorium benefit arrangements, will in future be given treatment by their own doctors, and supplied with medicines under the medical benefit scheme. The arrangements for other forms of treatment for tuberculosis will, however, be in the hands of the County Tuberculosis Committee.

### Peamount Settlement for Tuberculous Patients.

The Irish Free State Department of Local Government and Public Health has agreed to the payment of a special weekly fee in respect of every patient who receives industrial training at the village settlement which is being established in connexion with Peamount Sanatorium near Dublin. In a letter recently addressed to the boards of health the Peamount committee of management states that important developments have taken place during the past few months. Thirty-one patients are now receiving industrial training, concurrently with medical treatment, with a view to their becoming permanently employed by the Peamount industries. Goods are being produced and sold on an economic basis, so that patients who eventually become permanent employees will be able to maintain themselves and their families at little or no cost to public funds. At the same time, they will remain under medical supervision, so that the relapses, or breakdowns, which form so prominent a feature of tuberculosis after-care, may be avoided, and the risk of infection limited. Special stress is laid upon the fact that, while the fees now approved are no higher than those payable in respect of patients treated at ordinary sanatoriums, the Peamount institution can offer additional benefits which are unique. The letter states that at Peamount it is now possible not only to provide full sanatorium treatment with occupational therapy of a purposeful kind, but, further, to develop this occupational therapy into a permanent paid employment for suitable cases. In inviting boards of health to send tuberculosis patients to Peamount for treatment and training, with the object of permanent settlement, the Peamount committee declares its intention of providing a village settlement for the tuberculous of the Irish Free State, and hopes that its success may emulate that already achieved by the Papworth Village Settlement in Cambridgeshire, which has been described as "the most important international demonstration of anti-tuberculosis work at present being carried on anywhere." At the request of the Marchioness of Aberdeen and Temair, president of the Women's National Health Association, Dr. P. C. Varrier-Jones, the founder and medical director of Papworth, has undertaken to supervise the development of Peamount, so that it may proceed along lines that have proved to be successful.

### Meals for School Children.

The annual report of the Ministry of Education of Northern Ireland states that schemes for medical inspection of public elementary school children are in operation in all areas except Derry City and County Armagh. Outside the city of Belfast, committees have evidently not attempted to cope with the question of providing at least one free meal daily to necessitous children in town and country. The winter proved only too clearly the need for concerted philanthropic endeavour in this direction. Badly nourished and ill-clad children were seen even in some of the rural schools, where the provision of a hot meal at midday would have done much to save them from becoming a permanent burden on the State owing to physical weakness. According to a report there is no reason to fear that service of this kind in season will produce pauperization.

# Scotland.

### Changes in Edinburgh Public Health Department.

DR. WILLIAM ROBERTSON, who had been medical officer of health for Edinburgh for over seven years, retired from the position on September 8th, when he was succeeded by Dr. John Guy. Many useful contributions, to both the literature and practice of public health, have been made by Dr. Robertson during his tenure of office. While medical officer of health for Leith, prior to his appointment in Edinburgh, he was a pioneer in the work of the medical inspection of school children, and drew up an exhaustive report on the examination of pupils in Leith before these examinations had been adopted in other places. He was also a pioneer in introducing protective inoculation of

school children against diphtheria. He is well known as an organizer of successful health exhibitions, and as a popular lecturer in health subjects. His book on *Sanitary Law and Practice*, now in its sixth edition, and his work on *Meat and Food Inspection* are among the textbooks used by those qualifying for the diploma in public health. During the war, in conjunction with Dr. Oliver of Roxburghshire, he designed a steam disinfector, which was used by several of the allied armies.

It was intimated at the meeting of the public health committee of Edinburgh Town Council on September 9th, that Dr. John Guy had been appointed lecturer on public health at the University of Edinburgh in succession to Dr. Robertson. At the same meeting Dr. H. C. Elder was appointed tuberculosis officer for the city in succession to Dr. Guy. Dr. Elder graduated M.B. at Edinburgh University in 1917, and was assistant for a time to Sir Robert Philip, professor of tuberculosis in the University. He was afterwards transferred to the public health department of Edinburgh as deputy tuberculosis officer.

On September 11th Dr. John Guy was entertained at a luncheon by the Rotary Club of the city, and gave an outline of the present state of the public health services in Edinburgh. In that city, he said, there were ten subdepartments in public health, of which eight were directed by medical men, one by a veterinary inspector, and one by the sanitary inspector. Seventeen years ago the total sum expended on public health was £35,000 per annum, while the estimate for the present year amounted to £347,000. The oldest special department was that of tuberculosis, which had three medical officers and a large staff of nurses, but he believed that the time would come when this department would disappear. In the child welfare department there was a medical officer with four assistants and a large body of nurses. The venereal diseases department had been set up during the war, and was administered in conjunction with the Royal Infirmary, where all the expenses incurred in connexion with this disease were paid by the city. The inspection of school children was under the care of a medical officer with four assistants; no recent advance in public health showed better results than did school inspection, which had been responsible for a marked improvement in the general growth and physique of the children. A new charge had been laid upon the public health department in the care of the sick poor, who numbered about 700. They were admitted to the hospital at Seafield, formerly a poorhouse, which now provided the highest standard of medical treatment. The department had also taken over Bangour Asylum, which had 1,000 inmates, and also the care of the mentally defective, for whom an institution was being erected at Gogarburn.

### Sanitary Congress in Edinburgh.

The Royal Sanitary Association of Scotland, instituted in 1875, held its annual meeting at Edinburgh on September 10th and 11th. The delegates were welcomed by Lord Provost T. B. Whitson, who referred to the excellence of the work carried on by the association. While the provisions of the Local Government Act of 1929 might be difficult of adjustment, they made towards the uniformity and extension of health services, and the future might be regarded with great confidence. The public conscience had been awakened since the war to the evils of bad housing conditions, and the new Housing Act of 1930 gave an impetus in dealing with the slum problem. He thought that they must get rid of the idea that slum dwellers would create slums wherever they went, and look forward to a time when a generation brought up under the influences of food, air, light, and sanitation, and the beauty of small gardens, would change the whole of life. There was some danger that in clearing slums municipalities might work on a patchy system; he thought that there was sometimes wisdom in a bolder policy that effected clearances which might be used for the better architectural and business development of the town. No official efforts of a department could have brought about the present extensive system of public health administration unless the feeling of the citizens had been behind it. While civic government was carried out more and more by experts, care was necessary that the old mistake should not be repeated of taking away responsibility and interest from the community. A discussion on gas undertakings and smokeless fuel in relation to public health was introduced by Sir William E. Whyte, chairman of the Scottish executive committee of the National Gas Council. He gave statistics showing the relation between an increase in the use of gas and a purer atmosphere. In Glasgow in 1915–16 the fall of soot was 450 tons per square mile; in 1921–22 it had been reduced to 241 tons. During the interval the increase in the amount of gas supplied had exceeded 500,000,000 cubic feet. Sir William remarked that some public alarm had been caused recently in regard to the dangers that attended the use of gas, and the fact that gas was largely used by suicides. He considered, however, that the number of accidents caused by gas poisoning was very small in comparison with accidents from other causes, and the abuse of gas by a small section of the community was no reason why its proper use should be discouraged, because the people who committed suicide would still do so if gas was not available. A lecture was delivered by Mr. Gilbert Thomson on progress in sanitation, dealing chiefly with water supply, drainage, and sewage. He pointed out that the progress which was specially needed in the future concerned the improvement of rural water supplies, and that these could probably be most easily provided by comprehensive undertakings. A discussion on housing was opened by Mr. Allan W. Ritchie, chief sanitary inspector, Edinburgh, who said that the great task of slum clearance and housing improvement had recently become a party cry of politicians. Many persons were of the opinion that slum conditions were largely due to careless and destructive tenants, but he was compelled to correct this erroneous view, for while bad tenants might contribute to the evil, the main causes were site congestion, subdivision, overcrowding, and lack of sanitary conveniences. Powers for improving the housing of the working classes had been available since 1890, but the results obtained up to the present time had been very meagre. There had been a process of condemnation, demolition, and clearance of congested areas, and in recent times large numbers of modern dwellings had been erected by local authorities. These efforts, however, had only touched the fringe of the problem. Local authorities had estimated after 1919 that 34,755 houses were necessary to replace houses that should be closed and demolished, while a further 41,880 were required to meet cases of overcrowding. In the annual report of the Department of Health for Scotland for 1929, it was stated that the total number of houses dealt with in the ten years had been 14,527. In his opinion the problem could be solved within twenty years if the local authorities faced the situation seriously. The question was one of finance, for in order to build houses at the present cost and let them to the citizens who urgently required them at a reasonable rent, they would have to get the money for nothing; thus the private builder was excluded until he was in a position to build freely as in pre-war days. Dr. Clark, assistant medical officer of health for Glasgow, pointed out that the Act made provision for hostels, and there might be some inducement for local authorities to erect such places, because anything which would do away with the one-roomed house would be welcome. A discussion on rural housing was opened by Mr. James T. Storry, county sanitary inspector for Midlothian, who said that there was little difference in the housing problems of rural and urban areas. About 43 per cent. of the new houses estimated to be required were needed in landward districts, including agricultural, industrial, mining, and crofting areas. This shortage had not been remedied since the war. The necessarily isolated sites of these houses tended towards a low standard of sanitary services, and it was often found that all sanitary conveniences were absent unless provided by the occupier. The houses were generally, however, of substantial structure,

and could be reconditioned at much less cost than a new building, so as to conform with the highest present-day standards. The Housing (Rural Workers) Act, 1926, had offered an unprecedented opportunity for making a marked impression on housing and extensive improvements had already been carried out under the Act. The process of bringing housing conditions up to a satisfactory standard in rural areas must, however, necessarily be slow.

### The Scottish Western Asylums' Research Institute.

Dr. Sarah H. Maclachlan, director of the Laboratory of the Scottish Western Asylums' Research Institute, gives an account in her report for the year ended December, 1929, of an investigation she carried out in conjunction with Dr. A. S. Paterson on the blood sugar reaction to insulin in the psychoses. In the *Archives of Neurology and Psychiatry* (January, 1929) Appel and Farr had stated that a relatively sharp fall in the blood sugar to the extent of 29 per cent. took place in most cases within ninety minutes of the injection of 5 or 10 units of insulin, and that the recovery process was more gradual and not complete in three and a half hours. These results Drs. Maclachlan and Paterson were able to corroborate. Further, they investigated ten cases on lines suggested by Appel, Farr, and Marshall, who had studied the effect of insulin on the under-nutrition of patients with psychoses. The method consisted in giving the patient increasing doses of insulin each day for a month, beginning with 10 units and working up to 40 or 45 units. The dose was then gradually lessened, and a course of over-feeding without insulin administration was adopted for another month; in all cases a special diet of 4,000 calories was given. In the third month the patients received the special diet with insulin. No change was found in the character of the blood sugar curve; as far as the patients' condition was concerned, a few gained weight, in some the weight remained stationary, and in all the mental condition was unchanged.

## India.

### Medical Aid for Women in India.

THE annual reports for 1929 of three separate organizations under the presidency of Lady Irwin have been issued in a single volume. These organizations are the National Association for Supplying Medical Aid by Women to Women of India, which incorporates the original Dufferin Fund and the Women's Medical Service; the Victoria Memorial Scholarships Fund; and the Lady Chelmsford All-India League for Maternity and Child Welfare, including the Lady Reading Health School. In the introduction to this volume tribute is paid to the valuable work accomplished by the late Marchioness of Reading, who was president of the various funds when important administrative changes in their management were brought about. Among other services she appointed a committee which enabled the various organizations to become more closely related, thereby effecting helpful economies; her sympathy and active support were largely responsible for the establishment on a sound basis of the hospital at Simla and the health school at Delhi, and she used her influence to promote the annual holding of baby weeks in widely scattered centres in India. The financial condition of the Countess of Dufferin's Fund has slightly improved during the period reviewed in the present report, although no increased help was received from the Government of India. Serious overcrowding and financial stringency continues to handicap certain hospitals in which the Women's Medical Service is functioning, but increases in staff are reported in the United Provinces and the Central Provinces. A more definite effort is now being made to reach the women in rural areas in the United Provinces. Regional conferences have been arranged by the Victoria Memorial Scholarships Fund to discuss the training and work of native midwives; this new departure has proved very popular, for it has provided an opportunity for delegates to exchange their varied experiences. Details are given of the steps taken to instruct these women, and some of the difficulties encountered are enumerated. In the report of the Lady Chelmsford League special attention is paid to health schools; it is mentioned that the grants-in-aid which have been contributed have proved particularly useful in that they have been made conditional on satisfactory instruction being given. These schools train women more especially for child welfare work; they now exist in all the large provinces of India except Bihar and Orissa, and Assam. Since the requirements of these two provinces are being met by other health schools, there is no need at present for special schools to be established by the League. Accounts of the work in progress at various branches and schools are published, and the impression produced on reading the report is one of admiration for the immense amount of devoted service rendered by the health workers. Baby weeks and health schools continue to gain popularity, and are found to have more than a passing influence because they create a desire for permanent health work in centres where hitherto little has been done. Such activities as general improvements in hygiene, the correction of imperfect sanitation, and the improvement of water supplies are among the useful results of these baby and health weeks.

### Progress of Vaccination in the Punjab.

In commenting on the rapid progress of vaccination in the Punjab during the triennium 1926 to 1929, Lieut.-Colonel C. A. Gill, I.M.S., director of public health, Punjab, emphasizes that both primary vaccinations and revaccinations must become much more general before effective control can be exercised over small-pox. Vaccination, he points out, is the only means of protection at present, since hospitals for segregation have not been established. The disease is apparently much more widespread than official statistics suggest; it is reported to be nearly twice as prevalent in the towns as in the rural areas. A great obstacle to early treatment seems to be the public attitude in regarding small-pox as an inevitable evil, to be concealed as long as possible. It is rarely notified, even in municipal towns, and the danger of allowing infected persons to appear in public is not realized. A striking instance, already referred to in these columns, occurred recently in Lahore, where the parents of a student who was found to have small-pox brought an action against the university authorities for refusing to allow him to continue an examination. Apart from the education of the public—which was actively maintained by propaganda—the extension of facilities evidently depends mainly on increasing the number of local vaccination establishments, and on the enforcement of the Vaccination Act and of the regulations framed under it by local authorities. During the triennium the Act was adopted by fifty-three municipal and small towns, but the arrangements for vaccination in municipal towns is considered to be unsatisfactory. Although all of them have adopted the Act, many had made no regulations at the date of the report; while in others such regulations as had been passed were a dead letter. By the Vaccination Law (Amendment) Act, 1929, district boards are now empowered to make vaccination compulsory in any part of the area under their jurisdiction. Another preventive measure, instituted during the triennium, was a scheme for the employment of female vaccinators for women. Training in vaccination has been added to the curriculum of the Punjab Health School, and health visitors carry out vaccination as part of their ordinary duties. The total number of operations performed during the period was over four million, the highest recorded, being an increase of more than 919,000 over the figure of the previous triennium. An increase of 212,272 operations is reported for the year 1928–29 over the number of the preceding year, the increase in respect of primary vaccinations and revaccinations being 93,889 and 118,383 respectively. These results are attributed partly to the larger number of vaccinators available, partly to the exceptionally high birth rate and low infant mortality rate, and partly to the healthiness of the year, which enabled a close supervision to be maintained over the vaccination staff.

# Correspondence.

## THE RESEARCH DEFENCE SOCIETY.

SIR,—I wish I could persuade more members of the medical profession to be subscribers to the Research Defence Society.

We do not need any large sum, but if we could get two hundred more annual subscribers of £1 it would make our work easier to carry on. We are the only society that exists to expose the misstatements of the anti-vivisection societies and agitators. They preach that all experiments on animals are useless, that no good has come from them to man or beast, and that the experiments are grossly cruel.

An uninformed public accepts such statements as true, and the only way to get the facts known is by the propaganda of a society such as ours. But this is expensive, and so I ask the help of those who wish it well. —I am, etc.,

KNUTSFORD,
Chairman, Research Defence Society.

11, Chandos Street, Cavendish Square, London, W.1, Sept. 13th.

## PERFORATING DUODENAL AND GASTRIC ULCERS.

SIR,—I read Mr. John Watson's paper on acute perforating duodenal and gastric ulcers in your issue of August 2nd with interest, and I have also noted the discussion in your correspondence columns on this subject. I should like to add my comments on 101 cases operated upon by me between the years 1920 and 1930 at the two hospitals in Bradford, including also private cases.

Of these 101 cases, 12 died, giving a mortality of a decimal under 12 per cent. Of the 12 who died, 3 were over 70 years of age; of the remaining 9, 3 were operated upon thirty-six hours after perforation. Of the remainder, one persisted in going to the St. Leger after perforating in the train, another perforated in the ward and was taken immediately to the operating theatre. The remaining four perforated on a full stomach, the perforation in each case being as large as a sixpenny piece. Shock in the latter cases was extreme, and there were no signs of improvement with resuscitative measures.

My own experience is that immediately after perforation there is an interval of intense shock in which it is unwise to operate. Transit to hospital or home only aggravates the shock, and it is always preferable to wait two or three hours, during which resuscitative measures should be employed. Of these the best are radiant heat with saline and glucose, with brandy given per rectum. If no improvement occurs from these measures, as happened in four of these cases, the outlook is extremely grave. Spinal anaesthesia is unquestionably the one of choice. This allows the operation of suture to be performed through a minimal incision, and therefore the minimum of exposure—hence the minimum of shock. A roll of gauze is first introduced into the kidney pouch, and all exudate is absorbed. A rubber drain is left in, extending to the bottom of the kidney pouch, and this is removed at the end of forty-eight hours. Nothing further has been done either by way of more extensive drainage (a useless business) or of more heroic measures such as gastro-enterostomy.

Only 8 of these cases have returned with symptoms of obstructive ulcer, and these have been dealt with successfully. I have seen many of the others since, who are now in good health and have no symptoms. A few I cannot account for. Of my 101 cases, 16 have occurred in the better classes (16 per cent.)—business men and heavy cigarette smokers; 5 occurred in women. Of the remainder the preponderance has been in such occupations as postmen, tramway men, and men following irregular occupations where meals are taken irregularly and combined with the inveterate habit of cigarette smoking. I am convinced that this latter pernicious habit has a great bearing on gastric and duodenal crises. Combined with irregular and unsuitable food the ideal conditions for ulcer and perforation are established.

What are we to do to reduce the mortality? Looking down the list published by Mr. John Watson in the *Journal* the mortality is far too high. To see mortalities of over 20 per cent. against the names of distinguished surgeons takes considerable explaining against my own of 12 per cent.; for my own manipulative and surgical skill and experience can only pale before theirs, and I recognize this fact from my elders. The only explanation is the anaesthetic employed, and I feel sure that if spinal anaesthesia or infiltration anaesthesia (as I have often employed) were used the mortality from perforating ulcers would reach a far lower standard.—I am, etc.,

BASIL HUGHES, D.S.O., M.A., M.B., B.Sc., F.R.C.S.

Bradford, Sept. 11th.

SIR,—The following case may be added to the list Mr. Russell Coombe has given of operations for perforated gastric ulcer in the early days of the operation.

On September 15th, 1894, I was sent for to see a young woman who had been seized with sudden pain in the abdomen at 9 p.m. I sent her into the Royal Berkshire Hospital, and at 10.30 on the following morning—thirteen and a half hours after the perforation—the late Mr. James Hopkins Walters operated and sewed up a small perforation. The patient recovered.

I have a vivid recollection of the Simon and Barling case at the General Hospital, Birmingham, as I gave the anaesthetic. No time was wasted in getting the operation done, but there was an unusually large amount of stomach contents in the abdominal cavity, and I think the death was due to this.—I am, etc.,

G. H. R. HOLDEN, M.D.

Reading, Sept. 14th.

## ETIOLOGY OF PUERPERAL SEPSIS.

SIR,—Dr. Colebrook is entirely at fault (September 13th, p. 446) in suggesting that we have attached insufficient importance to his paper on anaerobic streptococci in puerperal fever (July 26th, p. 134). We did but seek to learn the relationship of these new cases of mixed anaerobic streptococcal infection in the puerperium to the clinical condition diagnosed puerperal thrombo-phlebitis. We still await instruction on this point.

Dr. Colebrook states in his letter that "there was definite evidence of thrombo-phlebitis in only one-third of the cases giving positive blood cultures of anaerobic streptococci." The impression given by his original paper is as follows: (1) Emphasis is laid on Schottmüller's findings that "the clinical conditions most frequently associated with infections by *Streptococcus putridus* were subacute and chronic thrombo-phlebitis affecting the parametrial venous plexuses, and salpingitis." (2) Six complete cases in Dr. Colebrook's series came to necropsy; in four septic thrombosis was found in pelvic veins, and in the other two infarcts were demonstrated. (3) Dr. Colebrook's description of the clinical features of his cases runs: "there is usually no pain, and little can be made out by physical examination, except perhaps a slight tenderness on deep palpation over the brim of the pelvis—a sign which can often be related at necropsy to a septic thrombus in the ovarian veins." We submit that no alternative was left to us save the reasonable interpretation advanced in our letter (August 23rd, p. 305) that Dr. Colebrook has been concerned with the clinical state known as pelvic thrombo-phlebitis in the puerperium.

Dr. Colebrook misquotes our letter of August 23rd in that he states that "Dr. Armstrong and Mr. Burt-White . . . infer that these microbes can do little harm to human beings." Our letter contains no such suggestion. All that we affirmed was our personal experience that the anaerobic streptococci were normal inhabitants of the genital tract and of low pathogenicity. Our tests were made on laboratory animals. Dr. Colebrook records no animal tests in his paper. We by no means denied (vide our letter) the potential danger from these organisms when the factor of trauma becomes superimposed.

We cannot seriously accept Dr. Colebrook's declaration that (in his own words) "most of our discussions about

the etiology of puerperal fever are but waste of time." So reactionary a spirit in a scientific worker is surely to be deplored.—We are, etc.,

RICHARD R. ARMSTRONG.
HAROLD BURT-WHITE.

London, R.C.1, Sept. 13th.

## THE TREATMENT OF PRURITUS ANI AND ANAL FISSURE.

SIR,—In the *Journal* of August 30th (p. 311) Mr. Gabriel advises 10 c.cm. of A.B.A. solution as the initial dose; this large amount is in marked contrast to the 2 c.cm. he recommended previously (June 15th, 1929). I have found A.B.A. very effective in the smaller dosage, and would be chary, despite Mr. Gabriel's reassurance, of using 10 c.cm. initially, for the following reasons. Injection of large quantities of oily solutions—for example, 5 to 15 c.cm. of 5 per cent. phenol in oil—was formerly used extensively for haemorrhoids, especially in America (Mitchell, 1871). Pyrexia, rigors, and extensive inflammation frequently resulted, and many deaths were reported (Andrews). Except amongst a few practitioners here and on the Continent the treatment was abandoned years ago. The outstanding point noted was that marked idiosyncrasy (pyrexia, rigors, collapse) to *large* doses of oily solutions was frequent. I recently saw a pitiful case following injection of 15 c.cm. of 5 per cent. carbolized oil; the patient was disabled for two months.

In my opinion the initial dose of all local anaesthetics, oily or aqueous (I have used the latter extensively in pruritus), should be small, to test the patient's susceptibility; Mr. Gabriel's "knock-out blow" theory for the pruritus is admirable provided there is no risk of the *patient* having to take the count. The ideal is not to give the maximum but the minimum dosage necessary to stop the pruritus. One can always increase the amount. I have used and advocated anaesthesin for many years, and for that reason prefer Mr. Gabriel's oil solution of that drug (A.B.A.) to the many others now recommended.

He states: "In pruritus ani it is only the intractable cases which need treatment by injection of A.B.A. . . . three doses—10, 5, and 5 c.cm.—of A.B.A. *is sufficient for cure.*" (The italics are mine.) As this large initial dosage has only been given in recent months (a year ago his advice was 2 c.cm.), I hope I will not be considered carping if, whilst congratulating him on his success, I say that a longer experience will be necessary before so definite an assurance as "cure" can be given for such an intractable complaint. If injections give complete relief for even six months their value will be great, as they can easily be repeated and will supersede all undercutting operations.

Spinal anaesthesia with forcible dilatation of the sphincter to admit five or six fingers is drastic treatment for fissure. Neither as house-surgeon and temporary assistant surgeon at St. Mark's Hospital nor in private practice have I seen a case needing it. A chronic fissure, no matter of what type, is only an ulcer; when relaxation of the sphincter is obtained by local anaesthesia and the fissure incised, it should then be treated as are ulcers elsewhere. The diamond-shaped incision (one-third in the anal canal, two-thirds on the skin) employed in my time at St. Mark's Hospital has the advantage of the large triangular incision recommended by Mr. Gabriel (the diamond is simply two smaller triangles base to base) without the disadvantage of having a wide, sore skin area—that is, the base of the larger triangle—much of which does not help drainage. The "inevitability" of the healing of the anal wound will depend more on its treatment than on the shape of the skin wound.

A special fissure speculum made to my design by Messrs. Bell and Croyden some years ago enables me after anaesthetizing the sphincter to investigate fully any type of fissure without forcible dilatation. It is about twice the length of the "Mummery" speculum, its groove being prolonged to the tip, so that the speculum does not come in contact with the fissure.—I am, etc.,

P. KENNEDY MURPHY.

London, W.C.1, Aug. 31st.

## GENERAL EDUCATION OF THE MEDICAL STUDENT.

SIR,—Professor Dean, in his very able article in the Educational Number of the *Journal*, published on September 6th, emphasizes the point that the general education of the medical student is in danger of being neglected. Everyone will agree with him, but something more than agreement is needed. I think he may approve my contention that the best thing that can be done for the profession of medicine, or indeed any other profession, is to devise some method whereby the number of men therein with first-class literary attainments can be increased. I submit the following ideas for his consideration and support.

The General Medical Council should issue a regulation that men who take a first in "Greats" at Oxford or a similar degree in classics and philosophy at Cambridge, and desire to enter the profession of medicine, may ignore the time table and regulations incumbent on others, being required merely to become attached to a medical school and to pass the examinations. An Oxford don once remarked to me: "If the G.M.C. would act thus, they would get the men." What more do we want than to achieve the utmost that can be done for any profession? We all learn medicine after we have taken our degree. I submit that it is quite unreasonable to ask, as the G.M.C. does, that a man with first-class literary attainments should go through a course laid out for the average medical student.—I am, etc.,

DAVID ROXBURGH.

London, W.1, Sept. 10th

## TECHNIQUE OF INJECTING VARICOSE VEINS.

SIR,—I have followed with interest the series of letters which have recently been appearing in the *Journal* on the treatment of varicose veins by injection. There is no doubt that as a valuable therapeutic measure this method has come to stay. It appears to me that one point which is insufficiently stressed by writers on the subject is the essential simplicity of the method as regards both the patient and the practitioner. The description of numerous varying points of technique tends to render the beginner doubtful which to employ, whereas all that is required to achieve satisfactory results is what the law demands—namely, the employment of reasonable skill and care. In dealing, however, with large numbers of hospital out-patients a method must be adopted which is not only simple and efficient, but which takes the minimum amount of time. There are two points which I believe are of the greatest importance in achieving this end—namely, the use of suitable needles, and the standing position for the patient on a couch or chair.

The advantage of using a needle which is short in length and short in the point, instead of the ordinary hypodermic variety, cannot be over-emphasized. The only drawback is that these needles require more frequent sharpening or renewal, but so long as this is attended to there is no danger of missing the vein nor of the needle-point slipping out while the injection is being given. Such needles are either in the vein or outside it, and the preliminary attempt to withdraw blood decides which is the case. The standing posture of the patient has the following advantages. It obviates the use of a tourniquet, and gives the surgeon the best possible access to any part of the leg or foot without requiring him to crouch on the ground; at the same time it enables him to steady his arm on the couch while giving the injection.

In other points the technique adopted is similar to that described by Dr. Noel Scott in the *Journal* of July 12th (p. 58), except that quinine and urethane in 2 c.cm. ampoules is the only solution used. By commencing with an initial 1 c.cm. dose, continuing with weekly injections of not more than 2 c.cm., and always applying a firm pad and bandage immediately after the injection, no untoward reactions have been noted in a series of 100 cases. With regard to 10 per cent. sodium morrhuate, I have not found it so satisfactory a sclerosing agent as quinine urethane; moreover, its oily nature renders the thorough cleansing of the syringe between injections more difficult. In fact, its

only advantage appears to be that it is less liable to cause a slough if the vein is missed, an accident which I believe can be entirely avoided by the employment of short-pointed needles, and the prevention of any extravasation of blood by a firm pad.—I am, etc.,

CHARLES R. McCASH, M.B., F.R.C.S.Ed.

London, N.6, Sept. 1st.

## THE PERFORMANCE OF NECROPSIES BY GENERAL PRACTITIONERS.

SIR,—Though I have retired from active work I find this correspondence extremely interesting. Many years ago, as county medical officer of the West Riding of Yorkshire, I conferred with the coroners of the Riding—able and progressive men—about initiating a position such as "county autopsy officer"; and, with the permission of the Public Health Committee, I delegated these duties to the bacteriologist, now designated also "county pathologist," who, as far as his laboratory work would allow, performed necropsies, especially in relation to criminal cases and cases of suspected poisoning. Many of our colleagues engaged in general practice welcomed this help, and in my opinion the time is now ripe for making such appointments in county areas.—I am, etc.,

JAMES ROBERT KAYE.

Hove, Sept. 13th.

SIR,—I have read with interest the correspondence on this subject, and agree with the opinions of Dr. Binns (September 13th, p. 449). Is the general practitioner going to abandon another branch of his profession? Many men on entering practice shirk surgery, fearing the responsibility, and after a time are afraid to incise an abscess. Midwifery, which thirty years ago was considered the backbone of general practice, is likewise given up, and handed over to "homes" and midwives. Less and less dispensing appears to be done; I suppose, now that the chemist does the bulk of it (panel), it is thought not worth while to keep a dispensary; moreover, handing out tablets is so much simpler. In the above ways the practitioner loses many pounds every year, and, what is more to the point, loses his self-confidence. I always welcomed—and would still, if the opportunity occurred—an order to make a post-mortem examination; it is an interesting change from the daily routine, and teaches many things—self-reliance among others. What if the surroundings are inconvenient? I have done an examination in a caravan by the light of one candle, and the circumstances do not take away one's scientific interest.

"G.P." (September 13th, p. 449) groans at a seven miles journey on a winter night—in a comfortable closed car, I presume, perhaps with a chauffeur! He should try an open gig with carriage candles; he might then have more reason for "writing home about it." I consider it will be most regrettable if the proposed abandonment of post-mortem examinations by general practitioners is carried out. By all means let us have mortuaries and necropsy rooms—a post-mortem examination in a private house is most unpleasant for the relations—but let us do our own work and face our responsibilities.—I am, etc.,

H. W. WEBBER.

Plymouth, Sept. 13th.

SIR,—As a young man with but seven years of general practice to speak from, I view this correspondence with a little amusement and a greater apprehension. Apprehension because I am reminded of the only time in which I raised my voice (somewhat hesitatingly) at a meeting of the local Division of the British Medical Association, regretting the passing of midwifery from the hands of the G.P. I was then informed that I had only myself to blame, as in the distant past I had been unwilling to exert myself sufficiently to get up at night, etc.

I venture to write because I feel that too often we younger men leave all this sort of thing to those "of thirty years' experience" and authors of pamphlets "in 1894." As a young rural G.P. I take it that the objections raised fall into three groups, and beg to comment on them in the light of my own experience.

1. A dislike for the performance of a rather unpleasant task under unsatisfactory conditions with inadequate instruments. *Eheu, fugaces*—— and midwifery! As to the task and the conditions I, like Dr. Binns, and I feel sure many others perhaps not yet old and sophisticated, welcome the experience and education afforded. As for the instruments, my experience is that these, like stethoscopes, thermometers, sphygmomanometers, etc., are of our own providing. Perhaps the feelings of the relatives might here be considered, who look upon the whole thing as a most disgusting necessity which the law imposes on the bodies of their lost ones. They dislike it at their homes, but to remove the body to the mortuary would in many rural minds class it with unclaimed derelicts, and add yet more publicity to an unwanted procedure. There are in this area two mortuaries, in neither of them any instruments, in one of them until a few months ago no hot water, and I unhesitatingly prefer the farm kitchen table with plenty of newspaper, plenty of hot water, and privacy to the gloom of the mortuary.

2. The inadequacy of the fees. This might with equal reason be argued about any of the daily duties of the rural G.P. In this case, with one operation to be performed and one report written, the fee compares handsomely with that received for emergency midwifery where operative risks are undertaken on two lives, with the liability to visit any number of times during the following ten days.

3. Lack of skill and practice on the part of the G.P. Looking back—not very far—on the opportunities of student years, I fail to see why this skill is less than that with which we launch out, armed with a stethoscope, etc., and endeavour to make a diagnosis of any of the conditions of infants and children. If he is conscientious and willing I see no reason why any G.P. should face a post-mortem examination with any more apprehension than he faces any anxious mother who calls him in to see her child with a high temperature, wretched pulse, an obviously ill appearance, and yet no diagnostic signs in chest or abdomen. Do we therefore at some future date propose to put such cases outside the domain of the G.P.? It almost looks like it. In the case of the post-mortem examination, as in the case of any clinical problem, the G.P., if in any serious doubt, has ample recourse to specialist advice, without any implication of "saving his face" or medico-legal humbug. As to practice, my own experience of seven post-mortems in just over two years may have been fortunate; but it compares favourably with my experience of small-pox, bronchiectasis, pernicious anaemia, and spinal myelitis, with which I am supposedly familiar and competent to deal.

To me the unsatisfactory thing is the total lack of need for, and the complete uselessness of, the majority of necropsies. Their sole purpose, I take it, is to protect the public against criminal deaths; they enable the coroner to issue a certificate of death from natural or accidental causes in the vast majority of cases, a fact which is generally fully substantiated without the post-mortem examination. My own experience may be illustrative. Five necropsies were on elderly people—over 70, with one exception—who for years were known to have "bad hearts," oedema of ankles and legs, breathlessness, and failing health generally. They died trying to perform some task beyond their years and condition. There was no suspicion of domestic or financial trouble, no reason for suspecting criminal operations of any kind; but because they had not been seen by a doctor for weeks before the event, off had to come their sternums, off their cranial vaults, and nothing gained but a properly filled-in report.

The little amusement I find from the correspondence is in the vision it conjures up of motor pantechnicons racing from some vast headquarters, carrying pathologists, loaded with retorts, Berzelius's tubes, microtomes, stains, and microscopes, a staff of laboratory assistants and expert chemists, all careering to some farm labourer's cottage to examine the corpse of "granfer," who, at the age of 89, has ceased to exist without the knowledge of the local G.P. I wonder what cause of death they would find?—I am, etc.,

R. E. S. GIBSON, M.B., Ch.B.

Bideford, Sept. 13th.

### TECHNIQUE OF RADIUM THERAPY.

SIR,—I have used for twenty-five years, and still use, unscreened radium for the treatment of rodent ulcers of small size and when not involving bone. I give a single dose, and place the radium at a distance from the surface equal to the diameter of the ulcer. A marked reaction occurs in about ten days, followed by scabbing. In six to eight weeks the cure is complete in almost all cases. Recurrence is very rare. The beta rays have certainly a very marked and valuable medicinal action.—I am, etc.,

Leeds, Sept. 13th. LEO. A. ROWDEN.

### TRANSECTION OF ULNAR OR MEDIAN NERVE.

SIR,—I am anxious to see, for the purpose of some simple observations, a few cases of quite recent transection of the ulnar or median nerve, preferably lesions in the region of the elbow and of less than five days' standing; and I should be grateful to any of your readers in London who could place me in contact with such patients.—I am, etc.,

University College Hospital Medical School, W.C.1, Sept. 13th. THOMAS LEWIS.

## Obituary.

### MICHAEL BEVERLEY, M.D.ED.,

Consulting Surgeon, Norfolk and Norwich Hospital; Fellow of King's College, London.

A VETERAN member of our profession, Dr. Michael Beverley, consulting surgeon to the Norfolk and Norwich Hospital, died at Overstrand on August 31st. He came of an old Norfolk family, and was for more than half a century prominent in the city and county, where he enjoyed a high reputation as a "general practitioner-consultant."

Michael Beverley was born at Brooke on September 26th, 1841, and on leaving school was indentured, as was then the custom, to a general practitioner, William Bransby Francis of Norwich. Part of the apprentice's duty was to keep the surgery in good order, and there he learnt to make pills and compound medicines; he was initiated also into "the art and mystery of physic," visiting poor patients in the slum parishes of the city and in the neighbouring country districts. Small-pox and typhoid were very prevalent at that time, and young Beverley took notes of many cases attended by him. He then acted as dresser and clinical clerk at the Norfolk and Norwich Hospital, and continued his studies in London at King's College Hospital under Sir William Ferguson, and in Edinburgh, where he "dressed" for Syme and "clerked" for Sir James Simpson. After graduating M.D.Ed. in 1863 he spent a year in Paris, attending daily the Hôtel-Dieu and other hospitals. News of a vacancy in the house-surgeoncy at the Norfolk and Norwich Hospital led him to become a candidate, and he entered on his duties at the end of 1864, thus beginning an official connexion with the hospital which lasted until 1912. After acting as resident medical officer for six years he went to Dublin to brush up his midwifery, and thence, in 1871, to Edinburgh, with an introduction from his friend William Cadge to Lister, who invited him to be present at his operations and follow up the subsequent treatment of surgical cases in hospital and private practice. Beverley returned to Norwich full of enthusiasm and ready to carry out the then Listerian system. He often recalled in later years the first time the antiseptic method was tried by Mr. Cadge and himself in the operating theatre of the Norfolk and Norwich Hospital. It proved a great success, although surgeon and patient had cause to remember the irritating effects of the carbolic spray. Beverley was present at Lister's introductory address at King's College, and kept in touch with "The Master" up to the last. Speaking at a public presentation at the time of his retirement he said: "Whatever success I have had in life I attribute in the main to my early and subsequent connexion with the Norfolk and Norwich Hospital. My work there during a long series of years not only grounded me with practical experience in all forms of accident and disease, but it brought me in touch with my professional brethren, amongst whom I made many and lasting friendships. It gave me the privilege of taking pupils, of whom I once had six, and finally it led to my partnership with the late Mr. Cadge." Professor Ernest W. White, who was a resident pupil at the hospital in 1868, recalls that Dr. Beverley was a first-class botanist, and would take his students out for walks in search of wild flowers before breakfast in the summer months; he was also one of the founders of the Norfolk and Norwich Naturalists' Society. "He was a thorough master of his profession, and both willing and anxious at all times to impart his knowledge in an impressionable manner, and his kindly sympathetic nature endeared him to us all and laid the foundation of lifelong friendships. Those who survive him will ever revere his memory."

For many years Dr. Beverley was intimately concerned in the work of the British Medical Association, which he had joined in 1870, and acted as honorary local general secretary for the Annual Meeting at Norwich in 1874. He was elected to the Central Council in 1893 as a representative of the East Anglian Branch, and served continuously until 1906. He frequently took part in debates, and was a diligent member of several committees. After twenty years' service as honorary secretary of the East Anglian Branch he held office as president in 1890-91, and for the following twelve years was a vice-president. He was also for some years a member of the council of the Medical Defence Union.

Dr. Beverley was the senior magistrate of Norwich, his appointment dating as far back as 1875, and after his election to the consulting staff of the Norfolk and Norwich Hospital he served as vice-chairman and chairman of the board of management. He was always delighted to talk of Sir Thomas Browne, and proud to call himself a fellow citizen of the author of *Religio Medici*.

The funeral service was held on September 3rd in Norwich Cathedral, in the presence of a large and representative congregation, including Mr. A. J. Blaxland, president of the Norfolk Branch of the British Medical Association, Dr. George Day, honorary secretary of the Norwich Division, and many other leading members of the local medical profession.

### LEONARD PORTAL MARK, M.D.

LEONARD MARK was born on February 4th, 1855, the son of Edward Walhouse Mark, who became consul at Marseilles in 1858, and grandson of William Mark, who had been consul at Malaga. Leonard Mark was educated at the Lycée Imperial at Marseilles, with 1,200 other boys, from October, 1866, to 1870, and under the guidance of his father (who entered Rugby under Dr. Arnold in 1830) he learnt to swim, fence, and walk in a manner admired by his fellow students but not copied by them. At the age of 18 he entered his father's office, but, the work proving uncongenial, he came to London and entered St. Bartholomew's Hospital in October, 1875, the choice of hospital being determined by the fact that Dr. Patrick Black, who had married in 1843 his aunt—Miss Mark—was then the senior physician. Mark qualified M.R.C.S. Eng. in 1879, but did not take the L.R.C.P.Lond. or the L.S.A. until 1881, nor the M.D.Durh. until 1898. He served as assistant house-surgeon at the Sussex County Hospital, Brighton, house-surgeon at the Richmond Hospital, Surrey, house-physician at the Lying-in Hospital in York Road, Southwark, and resident clinical assistant at the Bethlem Hospital. He then made a voyage to Australia, and for a time thought of practising in Calcutta. Eventually he settled in London, first at Beulah Hill, Sydenham, and, finally, at 49, Oxford Terrace, where he was in partnership with Mr. Henry Cripps Lawrence after the death of Mr. C. H. Cosens. He was at this time an active member of the profession who took a prominent part in the work of the Harveian Society, and was honorary secretary of the West London Medico-Chirurgical Society.

Coming of an artistic family, and being already known for his skill in water colours, he was invited to act as pathological artist at St. Bartholomew's Hospital upon the resignation of Mr. T. Godart, who had filled the post for many years. Mark accepted, and attended on certain specified afternoons, although he was immediately available if a case was found unexpectedly in the wards, the

out-patient room, or the post-mortem room. The collection of drawings in the hospital museum contains many examples of his skill. At this time and for several years previously he had suffered from the disease now known as acromegaly, and in 1912 he published *Acromegaly: A Personal Experience*. The work is of interest and value because it traces the course of the insidious disease which wrecked his life, from the appearance of the first symptoms, through its full development, to the time when it began to fail, or at least to become stationary. Fifteen years later he wrote a supplement entitled *The Apologia of an Acromegalic*. Neither account is in any way morbid or introspective, for he took a detached view of his case and recorded the various symptoms as he would have done had they occurred in one of his own patients. The account is rendered the more valuable because it is illustrated with photographs from the age of 4 to 57 years. It is remarkable that, in spite of the enlargement of his hands and feet and the intensity of the headaches, the fact that he was suffering from acromegaly only became known to him as if by a sudden intuition about forty-five years after the onset. He then discovered that it had long been known to his medical friends, and even to some members of his own family.

Leonard Mark died, having never married, on September 5th, at 49, Oxford Terrace, aged 75. In a true scientific spirit he directed that an examination of his brain and skull should be made by a skilled pathologist. He also left a detailed diary, which should be of value in still further elucidating his symptoms. Although Mark's life was crippled and spoilt by disease he was not, nor would he like to have been thought, a martyr. So long as it was possible he went about his daily work quietly, without repining, and when he was no longer able to leave his house he welcomed his friends with the courtesy or an English gentleman bred in France. His knowledge of French, both colloquial and written, was complete, and was usually called upon at the various medical international congresses and at gatherings to promote the entente cordiale. He was often asked to give an opinion upon questions of antiquarian medical art, and his decision was always considered final. He was a lover of Montaigne, and wrote a pleasant account of the great essayist's travels, which he was able to elucidate from personal knowledge. D'A. P.

Dr. F. R. B. ATKINSON writes:

Although I did not know the late Dr. Leonard Mark so well as many others I should like to say a few words of tribute to his memory. Always interested in his malady, he was ever ready to hear anything concerning it found in the literature, and it was not long since I told him he was the oldest case recorded as far as I knew. Ever suffering great discomfort during the fifty years of his illness, often in extreme pain, he never gave in. The last time I saw him he was deaf, nearly blind, could hardly walk, and was suffering from various complications connected with his disease. To show what manner of man he was I cannot do better than quote the words he uttered to me not so long since: "I have much to be thankful for." The medical profession is honoured by such a one.

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## THE LATE DR. CHARLES BUTTAR.

DR. W. CAMAC WILKINSON writes:

It is fitting that I should bear testimony to the truth of your obituary notice of an old friend who has recently been engaged in investigating scientific methods of dealing with tuberculosis among the poorer classes. I sympathized with Dr. Buttar's energetic crusade to prevent the general practitioner among the poorer classes being brought under the control of a Government bureaucracy, and my old friend Sir Dawson Williams brought Dr. Buttar within the ambit of my work.

Dr. Buttar was a man of keen intellect and high character. He had a logical mind, and soon found any weak spot in the armour of those who magnified the importance of ideas based mainly on authority or custom. He was a patient, eager searcher after truth, and friends and opponents alike will remember his bright eyes sparkling with energy as he proceeded to apply his own knowledge and critical faculty to any difficult problem with unerring logic and telling emphasis—and yet without any unworthy motive or personal bias. Recently I have had many opportunities of observing his keen power of analysis, despite his ill-health, and in his death medicine has lost a noble and loyal exponent of its highest ideals. His death is both a personal and a public loss. I trust that it will be proved that, even in the throes of his last sickness, his courage has enabled him to render a useful public service in attempting to sift the wheat from the chaff in the vexed question of the value of Koch's scientific method of dealing with the problem of tuberculosis among the poorer classes of society.

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Dr. W. H. REES-THOMAS of Basingstoke, who died on August 9th at the age of 60, was educated at the London Hospital Medical College and in Brussels. He obtained the diplomas M.R.C.S., L.R.C.P. in 1893, and two years later graduated M.D.Brux. He held the posts of medical officer of health for the borough of Basingstoke, medical officer of health and public vaccinator of the Basingstoke Union, medical superintendent of the Basingstoke Isolation Hospital, and surgeon to the Basingstoke Cottage Hospital. Dr. Rees-Thomas was a member of the British Medical Association.

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We regret to record the death, at the age of 49, of FREDERICK LIVINGSTONE TULLOCH, M.B., Ch.B., which took place at Aberdeen on August 10th. After graduating at Edinburgh University in 1911 Dr. Tulloch served as house-physician to several hospitals in England, and at the outbreak of war was in general practice in Birmingham. Being in the Army Medical Reserve, he was drafted to France in September, 1914, and served there during the whole period of the war. On his return to civil life he entered into partnership in general practice at Nuneaton, where he became first honorary radiologist to Nuneaton General Hospital, visiting medical officer to Bramcote Sanatorium, and medical referee under the Ministry of Pensions, and took an active part in the work of the Nuneaton Branch of the St. John Ambulance Association. Dr. Tulloch was not only exceptionally well versed in the essentials of medicine, but was one of those lovable men who always interested themselves in the welfare of others. He endeared himself to his patients, and was very popular among the young men of the district, entering actively into their recreations. About five years ago he had an attack of pneumonia from which he never completely recovered. In his infirmity he showed the fortitude that is seen only in those who possess stability of character in an exceptional degree. He leaves a widow and young son.

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Dr. JOHN AUGUSTUS BALL, who died at Oxford on August 23rd in his eighty-eighth year, had been associated with Stockport Infirmary for sixty-three years, and at the time of his death was senior consulting surgeon to that institution. He received his medical education at Guy's Hospital, where he later held the posts of house-surgeon and obstetrical resident. Having obtained the diploma M.R.C.S. in 1865, and graduated M.B.Lond. in the following year, he was appointed the first resident house-surgeon at Stockport Infirmary in 1867. Two years later he commenced general practice in that town, being elected honorary surgeon and chairman of the medical board of the Infirmary, and consulting surgeon eighteen years later. In 1869 he went to Heaton Norris. A keen member of the British Medical Association, he was elected president of the Lancashire and Cheshire Branch in 1887, and a banquet, attended by many celebrated men, including Sir Andrew Clark, was given at Old Trafford in his honour. In the same year he moved to Wantage, becoming later a vice-president of the Oxford Branch, but retaining, at the special request of the governors of Stockport Infirmary, his appointment there of consulting surgeon. He went to

Bromsgrove in 1894, and soon built up a large practice, finding congenial surgical work at the local cottage hospital. Dr. Ball was twice married; after his second marriage in 1902 he took charge of his stepfather's practice at Stradbroke, Suffolk. He retired in 1913, and went to live in Warwickshire, but on the outbreak of war resumed practice, acting as locumtenent for medical men engaged in military service. Soon after the end of the war he settled finally in Oxford. Dr. Ball was an outstanding figure in the medical and social life of every town in which he practised. He was a strong Churchman, a sympathetic and loyal colleague, and a skilled and devoted general practitioner.

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Dr. G. W. R. SKENE, who died on September 2nd at the age of 54, was a prominent figure in Willesden. He received his medical education in Edinburgh, where he obtained the diplomas L.R.C.P., L.R.C.S.Ed., and L.R.F.P.S.Glas. in 1901, and graduated M.B., Ch.B. in 1903; he proceeded M.D. seven years later. After a short residence in Stoke Newington he went to Kensal Rise twenty-five years ago, and built up a considerable practice. He rendered great service as medical officer to Willesden General Hospital, and was for twelve years a member of the council of that institution; he had recently been elected vice-chairman. He latterly associated himself actively with the work of the Willesden Nursing Association. He became a member of the Willesden District Council in 1921, and five years later was appointed its chairman. He took a leading part in the erection of Brondesbury Park Congregational Church, and was for many years superintendent of the Sunday school. The Rotary movement received his support, and he was largely instrumental in founding the East Willesden Club, of which he was the first president. He was a member of the British Medical Association, and was chairman of the Willesden Division from 1922 to 1923. He married twice, and is survived by a widow, a daughter, and two sons, one of whom is in the medical profession.

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Dr. JOHN COCKCROFT of Middleham, Yorks, died on September 7th at the great age of 92. He began his medical studies at Owens College, Manchester, and continued them at St. Andrews, obtaining the M.R.C.S.Eng. and L.S.A. diplomas in 1860, and graduating M.D.St. Andrews in the following year. Soon afterwards he began practice at Middleham in partnership with three other members of his family. The partners visited their patients on horseback, making long journeys to hamlets scattered among the moors and dales of North-west Yorkshire, and travelling as far afield as Garsdale, Kettlewell, and Pateley Bridge. The partnership was dissolved many years ago, and Dr. John Cockcroft thereafter continued the work single-handed. According to an obituary notice in the *Harrogate Advertiser*, to which we owe these particulars, there were few families in Wensleydale who had not called upon Dr. Cockcroft's services during his seventy years of active practice. Among his many reminiscences was a bad epidemic of typhoid fever at Thornton Steward in 1870, when he sent out medicine in clothes baskets to this little village. Dr. Cockcroft had a wonderful physique, and retained full possession of his faculties until two and a half years ago, when he had a stroke. His death removes one of those hardy, self-reliant Yorkshire doctors of the old school whom Sir Clifford Allbutt came to know so well and esteem so highly during the days of his consulting practice in the West Riding.

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The death has taken place at the residence of his mother, 440, King Street, Aberdeen, of Dr. ALEXANDER HUTCHISON of Buckley, Chester. Dr. Hutchison graduated in arts at Aberdeen University in 1899, and in medicine in 1904. He was in practice at Grantown-on-Spey from 1906 to 1924, and was well known and highly esteemed on Speyside. Latterly he had been in practice at Buckley, near Chester. He had not been in good health for some time, and went to Aberdeen to recuperate.

## The Services.

### DEATHS IN THE SERVICES.

Lieut.-Colonel Sidney Browning Smith, C.M.G., Bengal Medical Service (ret.), died after a long illness at Otford, Kent, on July 13th, aged 63. He was born on November 12th, 1866, the son of Dr. Thomas Browning Smith of Sittingbourne, Kent, was educated at Epsom College and at St. Bartholomew's Hospital, and took the M.R.C.S. and L.R.C.P.Lond. in 1890, and subsequently the D.P.H. of the London Colleges in 1910. Entering the Indian Medical Service as surgeon on July 28th, 1891, one of the last term who entered Netley under that title, before the grant of compound titles, he became lieutenant-colonel after twenty years' service, was placed on the selected list for promotion on June 24th, 1918, and retired on November 12th, 1921. When at Netley he gained the Parkes Memorial Medal for Hygiene. He served in the Chitral campaign of 1895, in the actions of Chakalwat and Nisa Ghol, was mentioned in dispatch No. 8 c of July 26th, 1895, and received the frontier medal with a clasp; he contributed some drawings to Younghusband's *Relief of Chitral*. He also served in the Waziristan campaign of 1901–2. He then entered civil employ in the Punjab, was posted as district plague medical officer at Amritsar in 1902–3, and was chief plague medical officer in the Punjab from 1903 to 1912. He was recalled to military duty on the outbreak of war in 1914, accompanied the Indian Expeditionary Force to Europe, and first served in charge of the Mont Doré Hospital for Indian troops at Bournemouth; and subsequently in Egypt, was mentioned in dispatches in the *London Gazette* of July 27th, 1917, and received the C.M.G. on June 4th, 1917. On his retirement he married Lady Edith Rattigan.

## Medical News.

THE opening ceremony of the ninety-sixth winter session of the Middlesex Hospital Medical School will be held at the Queen's Hall, Langham Place, on Wednesday, October 1st, at 3 o'clock. Mr. Eric Pearce Gould will deliver the introductory address, and the Rt. Hon. Arthur Greenwood, M.P., Minister of Health, will preside and distribute the prizes gained during the past year. The wards of the new west wing, the new nurses' home, the medical school, and research departments will be open for inspection. The annual dinner will be held at the Savoy Hotel (Embankment entrance) on Wednesday, October 1st, at 7.30 p.m.

THE annual prize-giving at St. George's Hospital Medical School will take place in the board room of the hospital at 3 p.m. on Wednesday, October 1st, when an address will be given by Lord Riddell on "Some things that matter for doctors, from a layman's point of view." The annual dinner will be held the same evening at the Hyde Park Hotel at 7.30 o'clock, with Dr. James Collier in the chair.

AT the opening of the new session of the Pharmaceutical Society's School of Pharmacy on October 1st, at 3 p.m., the inaugural address will be given by Dr. Arthur W. Hill, F.R.S., Director of the Royal Botanic Gardens, Kew.

THE Harben Lectures for 1930 will be delivered at the Royal Institute of Public Health (37, Russell Square, W.C.1) by Professor William H. Park, director of the Bureau of Laboratories, Health Department, New York City. His subject is "Pneumonia," and the lectures will be given at 4 p.m. as follows: October 6th, "Types of pneumococci in adults and children and their significance"; October 7th, "Epidemiology. The refining of antipneumococcus serum"; October 8th, "Therapeutic use of vaccines and antibacterial sera." No ticket of admission is required.

A COURSE of nine lectures and demonstrations in tropical hygiene and nursing will be given on Wednesdays, at 8 p.m., at 27, Grosvenor Place, commencing on October 1st. The course, which will cover such questions as food, clothing, and the medical and sanitary precautions necessary for health in hot countries, will be conducted by a medical man and a nurse, both of whom have had practical experience of life in the Tropics. Inquiries should be addressed to the county secretary, County of London Branch, British Red Cross Society, 27, Grosvenor Place, S.W.1.

THE next course of lectures and demonstrations in tropical hygiene, for men and women outside the medical profession proceeding to the Tropics, will be given by Lieut.-Colonel G. E. F. Stammers, on October 8th–10th, and 13th–17th, from 11 a.m. to 12.30 p.m. The fee for the course is one guinea. The synopsis can be obtained on application to the secretary, London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.

A THREE months' course of lectures and demonstrations on clinical practice and in hospital administration for the D.P.H. will be given at the North-Eastern Hospital, St. Ann's Road, Tottenham, N.15, by Dr. F. H. Thomson, on Mondays and Wednesdays at 4.45 p.m., and alternate Saturdays at 11 a.m., beginning October 1st. Medical men desiring to attend the course are required to pay the requisite fee (£4 4s. under new regulations, or £3 3s. under old regulations) to the Medical Officer of Health, London County Council, Public Health Department (Special Hospitals), Victoria Embankment, E.C.4, giving their full name and address.

THE Fellowship of Medicine announces that from September 29th to October 11th there will be a special post-graduate course in medicine and surgery and the special departments at the Metropolitan Hospital, Kingsland Road, E.8, from 10.30 a.m. to 5.30 p.m. each day, with special demonstrations in the morning, attendance at the surgical, medical, or special departments in the afternoon, and ending with a formal lecture at 4.30 p.m. There will also be daily pathological demonstrations. Luncheon and tea are obtainable at the hospital at a small charge. Special courses in October will deal with the following subjects: diseases of the ear, nose, and throat, October 6th to November 1st; tropical medicine, October 6th to 25th (all-day); gynaecology, October 13th to 24th; diseases of children, October 27th to November 5th, and orthopaedics, October 27th to November 5th. There will also be evening courses in preparation for the M.R.C.P. examination (17 lectures on Tuesdays and Fridays), and for the F.R.C.S. (final) examination (6 demonstrations on Wednesdays). Further particulars and syllabuses of all courses may be obtained from the secretary of the Fellowship, 1, Wimpole Street, W.1.

A POST-GRADUATE course in genito-urinary diseases, free to medical practitioners and students, will be given at St. Paul's Hospital, Endell Street, W.C.2, on Wednesdays at 4.30 p.m., from October 1st to December 10th. Tea at 4 o'clock.

UNDER the auspices of the National Council for Mental Hygiene a series of lecture-discussions will be delivered on Thursdays at 5.15 p.m. from October 16th to November 27th, in the lecture room of the Medical Society of London, 11, Chandos Street, Cavendish Square, W.1. Dr. G. W. B. James will open the series with a lecture entitled "A physician looks at history." The second, on preventive treatment in childhood, will be given by Dr. Alice Hutchison; and the third, on alcoholism and drug addiction, by Dr. Edward Mapother. Mental conflict and the development of character will be subsequently discussed by Professor William Brown, and the psychology of adolescence by Dr. Doris S. Odlum. The concluding lecture will be delivered by Dr. R. G. Gordon, and will deal with the importance of mental deficiency. Tickets (price 1s. 6d. each, or 7s. 6d. for the course) may be obtained from the secretary of the National Council, 78, Chandos House, Palmer Street, S.W.1, or at the door. It is also announced that the second Mental Health Conference, organized by the National Council, will be held in May, 1931.

THE British Science Guild announces that the sixth annual Norman Lockyer Lecture will be delivered by Professor Sir William Pope, F.R.S., on Thursday, November 13th, at 4.30 p.m., in the Goldsmiths' Hall, London; the President of the Guild, Sir Samuel Hoare, will take the chair at the lecture, the title of which will be announced later. The second annual Alexander Pedler Lecture will be given by Lieut.-Colonel Sir David Prain, F.R.S., in Liverpool, on Wednesday, October 22nd, at 5.30 p.m. The lecture will deal with "Science Discipline," and its delivery will be under the joint auspices of the University of Liverpool and the Guild.

A POST-GRADUATE course, open to all medical practitioners without fee, will be held in the library of the Medical School of St. Mary's Hospital on the three days October 3rd to 5th. Subjects to be dealt with include the after-treatment of some common operations; coronary thrombosis and cardiac pain; some minor common digestive disorders; nephritis; diagnosis of breast tumours; causes and treatment of vaginal discharge and irregular uterine haemorrhage; refusal of food by children; the management of septic infections, and the restoration of septic fingers and hands to normal function; the surgical uses of radium, and the treatment of diabetes. Further information may be obtained from Dr. C. M. Wilson, dean of the Medical School, St. Mary's Hospital, Paddington, W.2.

AT a meeting of the Royal Sanitary Institute, to be held on Friday, October 10th, in the Guildhall, Nottingham, discussions will take place on river pollution and on industrial medicine in relation to public health. The chair will be taken at 4.30 p.m. by Dr. Charles Porter.

THE thirty-sixth Congress of the Italian Society of Internal Medicine will be held in Rome from October 13th to 16th, when the following subjects will be discussed: pulmonary oedema, introduced by Professor C. Frugoni; differential diagnosis between visceral neuroses and organic disease, introduced by Professor P. Castellino; and the diagnosis and treatment of haematuria, introduced by Professor A. Ferrata. Further information can be obtained from the secretary, R. Clinica Medica, Rome.

THE Italian Society of Colonial Medicine and Hygiene will hold its third congress at Tripoli from October 3rd to 8th, when the subjects for discussion will be framboesia or pian, African relapsing fever, dengue, and animal trypanosomiasis.

THE first congress of the French Society of Plastic Surgery will be held in Paris on October 3rd and 4th, under the presidency of Professor Dartigues. There will be an exhibition of surgical instruments, models, skiagrams, and photographs. Further information can be obtained from the secretary, Rue d'Avian, 41, Bordeaux.

DR. M. I. FINUCANE, who since 1913 has been surgeon and medical officer to the A Division, Metropolitan Police, was presented on September 10th with a silver cigar and cigarette box, subscribed for by the officers and men of the division. The presentation was made by Chief Constable Brigadier James Whitehead in the presence of a very large gathering.

THE September issue of *Acta Rheumatologica*, the official journal of the International League against Rheumatism, contains an account of the recent congress of the league held at Liège. The principal subject for discussion was the disturbance in the skin circulation in rheumatic diseases, in which the following members took part: Jens Foyed of Copenhagen, J. van Breemen of Amsterdam, Gunnan Kuhlmeter of Stockholm, Laignel-Lavastine of Paris, and Ralph Pemberton of Philadelphia.

THE Water Pollution Research Board of the Department of Scientific and Industrial Research has issued a further series of abstracts of current literature in 1928 to 1929 dealing with water supplies, the analysis and examination of water, sewage and trade waste waters, pollution of natural waters, and various miscellaneous subjects. This booklet may be consulted in the library of the British Medical Association.

DR. RUDOLF KRAUS of Vienna has been appointed director-general of public health in Chili.

# Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are ***MUSEUM 9861, 9862, 9863,*** and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediocre Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

## QUERIES AND ANSWERS.

### INHERITANCE OF MENTAL DISORDER.

"AFFLECK" writes: A mother has been to see me recently with the following query: She has one child, 5 years old, who is mentally abnormal, but otherwise healthy. A paternal uncle is confined in a mental hospital, the paternal grandmother died there, and this grandmother's sister has been an inmate, but is now said to be recovered. All other relatives are normal. What are the chances of another child (which both parents are anxious to have) being normal in mind, and, if normal, what is the outlook for the generation to follow? I have, in the meantime, advised against pregnancy, but would like the opinion of other medical men about the inheritance of mental abnormality.

### WRITER'S CRAMP.

DR. W. BLACK JONES (Creigiau, Cardiff) writes: In reply to "Devon" (September 13th, p. 455), I suggest that treatment by electrolysis would be very beneficial; the methods are described in a paper which I published in the *British Medical Journal* of January 17th, 1925, entitled "Treatment of neuritis by electrolysis." Some years ago I suffered from this complaint, and the treatment has been quite successful.

"E. A. B." (London, W.1) writes: This condition should be regarded as a neurosis. Relief will almost certainly follow appropriate psycho-therapeutic treatment.

### SOUR MILK.

DR. H. M. SUTTON (Medstead, Hants) writes: Among the various methods of making sour milk mentioned by your correspondents I have not observed any reference to the very simple method in use in Germany. Fresh unboiled milk is put into a bowl or pie-dish or any such open vessel, without the addition to it of anything whatsoever. The vessel is placed in the larder in warm weather, or in the kitchen in cold weather, and after standing untouched for thirty-six to forty-eight hours, it is ready for use, having the appearance of junket and a very pleasant, slightly acid flavour. It may be eaten alone, or, as is usual in Germany, with a mixture of powdered cinnamon and sugar sprinkled over it. We have used this method in our house for forty-five years, and have found none other so simple and easy, and none to give better results, after having lived amongst and tried the methods of many nations.

### WHITE SPOTS ON FINGER NAILS.

DR. G. W. FLEMING (Todmorden) writes in reply to "R. L.'s" inquiry (September 15th, p. 455): I believe from observation of my own nails that these white spots are entirely due to injury to the quick of the nail (the white crescentic part) in pushing back the cuticle. If this is done gently, with as little pressure on the quick of the nail as possible, no further spots should appear.

DR. F. DOUGLAS MARSH (Edgbaston, Birmingham) writes: White spots on the finger nails are scars. They are caused by injury to the base of the nail fold, usually inflicted by pressing back the cuticle when it is dry. If the cuticle is dealt with only when soft and moist, the white spots will cease to be formed.

"E. J. P." writes: These spots can be caused by excessive zeal in manicuring, through bruising the nail bed with a sharp instrument. Let the patient use only a rubber "hoof" to push back the cuticle, but warn her that some spots have yet to appear from damage already inflicted.

"D. Y." writes: In my experience persons showing white spots on finger nails are invariably of a very nervous temperament, and frequently suffer from definite psychoneurotic symptoms.

### ANHYDROSIS AND ABSCESS.

DR. A. KENDREW (Ticehurst, Sussex) writes: In reply to Dr. R. Johnston McNab (September 13th, p. 456), who describes two cases of axillary adenitis following the use of a toilet preparation, it may be of interest to record a case of mine now under treatment for axillary adenitis and abscess, due to the use of one of the proprietary depilatories. There was no pyrexia.

DR. SPENCER CHURCHILL (Ryde, I.W.) writes: In reply to Dr. Johnston McNab's inquiry, I have had a similar experience. A maid in a boarding house applied a toilet preparation to her axillae for the purpose of removing hair. She made only one application, which was followed immediately by smarting and pain. A week later I was asked to see the patient (a plump brunette) because she was prevented from sleeping by pain in the right axilla. On examination she presented the signs of acute cellulitis of the right axilla. On the ninth day after the application of the irritant I incised an abscess and evacuated about 1/2 oz. of pus. One of the patrons of the boarding house declared that she had used the same toilet preparation without harm.

### 1 LB. AT BIRTH.

DR. E. H. HEATON (Clacton-on-Sea) writes: I do not know what is the smallest living baby recorded, but think the following might be worth reporting: 6 months' baby, male, weight 1 lb., was living and survived for 57 hours.

*** In the *Journal* of November 10th, 1928, Dr. W. L. Hubbard recorded the survival of a child whose weight at birth was 15 oz., and on December 8th, 1928, Dr. Herbert Shackleton recorded that of a child weighing 17 oz.

### INCOME TAX.

#### *Cash Basis.*

"T. B. E." has been assessed on the cash basis in the past, but has now been asked to state the total amount of debts outstanding at the end of the year.

*** It would be obviously wrong to include these outstanding debts without deducting the amount outstanding at the beginning of the year. That combined adjustment would have the effect of converting the "cash basis" to a "bookings basis," and is justifiable if there has been any appreciable change in the volume of the work done; otherwise, the result of the two methods should be substantially the same, and there is no necessity to discard the more convenient "cash basis." It should be remembered that in making the conversion mentioned above, an allowance should be claimed for bad debts—that is, the probable losses should be carefully computed and deducted from the gross totals at the commencement and the end of the year. It is largely in the avoidance of these troublesome estimates that the advantage of the cash basis lies.

## LETTERS, NOTES, ETC.

### INTERNATIONAL ORAL HYGIENE EXHIBITION.

WE have received the following communication from Mr. A. E. ROWLETT (165, London Road, Leicester) and Mr. J. MENZIES CAMPBELL (14, Buckingham Terrace, Glasgow, W.2), who are acting as joint organizers for the British Section of the Oral Hygiene Exhibition, Eighth International Dental Congress:

It was unanimously decided by the Hygiene Commission of the Federation Dentaire Internationale, during the recent session held at Brussels, that an International Oral Hygiene Exhibition should form part of the Eighth International Dental Congress at Paris from August 3rd to 8th, 1931. The organizing of this exhibition was delegated to a committee, comprising representatives chosen from all countries affiliated to the Federation Dentaire Internationale. In this way its international character is assured. As it is most desirable that Great Britain should be adequately represented, we should be glad if those who are in a position to assist with suitable exhibits relating to all branches of oral hygiene, including the teeth of children of all ages, as well as those of adults, and the care of the expectant mother, would forward to either of the above full particulars of any exhibits which they may be prepared to loan. This should be done as soon as possible, because the organizers of the Hygiene Exhibition will require to know before the beginning of December the exact space to allot to each country. It is particularly requested that our colleagues will assist in making the British Section of the exhibition eminently successful.

### SPECIALISM IN RADIUM SURGERY.

DR. A. CAMPBELL (Perthshire) writes: I shall be glad if Mr. Duncan Fitzwilliams would enlighten us on the following matters: (1) Who are the people referred to in his paper on the technique of radium therapy (*British Medical Journal*, August 30th, p. 309) as "trained and capable" of using radium? (2) How is one to know who may rightly be described as a specialist in radium surgery? (3) Are the institutions to blame if it is indeed a fact that "radium treatment in this country has survived in spite of . . . institutions which have loaned radium to people entirely ignorant of the subject"? Should they have left the radium in charge of a surgeon—that is, an F.R.C.S.—or a radiologist—that is, one who holds a D.R.M.E.—or should the appropriate specialist have had both degrees? I do not think that radiology is an optional subject for an F.R.C.S. examination, as it is for the M.R.C.P.Ed. How, then, is a hospital board to be guided? It seems plain to me that "radium surgery" should be in the hands of radiologists who are capable surgeons, and that radiology should be made a special subject for F.R.C.S. examinations.

### PREGNANCY AND CERTIFICATION.

"H. R." writes: I think it is time that a committee was appointed jointly by the British Medical Association and the Ministry of Health to lay down rules for the guidance of national health insurance practitioners in certifying pregnancy. I suggest this as much for our own protection as for the benefit of the patient. Guided by our regional medical officer, my habit has been to "sign the patient on" five weeks before the expected date. My experience has been that patients come up between four and a half and six months and ask to be "signed on the panel." They want to get "something out of the panel"—an investment to be repaid a thousandfold. I am sure that most of them who are signed on do heavy manual work in the house all the time. When I decline to sign them on, as I do in uncomplicated cases until the last five weeks, I am told that Dr. X or Dr. Y signs patients on without any fuss at the sixth month or earlier, and, what is more, allows a few weeks after the confinement. In one case I was told that for weeks one doctor was giving wool, lysol, sheeting, etc., in preparation for the confinement. Very often the patients are urged to this attitude by unscrupulous insurance agents, who seek thus to curry favour and effect private insurances. Some of my patients have transferred because of my refusal to sign them on at six months. Those who have stayed have been discontented. I suggest there should be definite times for signing on uncomplicated cases; thus, for example: light manual workers, eight months; heavy manual workers, seven months; and that no certification should be accepted on other times. This would put a stop to an undesirable situation, and to public accusation of liberal certification.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 43, 44, 45, 46, 47, 51, and 52 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48, 49, and 50.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 143.

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**(Signed).....M.B.Ch.B.**

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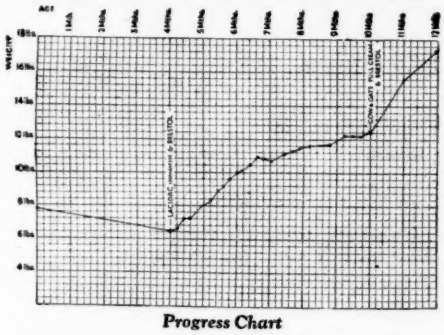
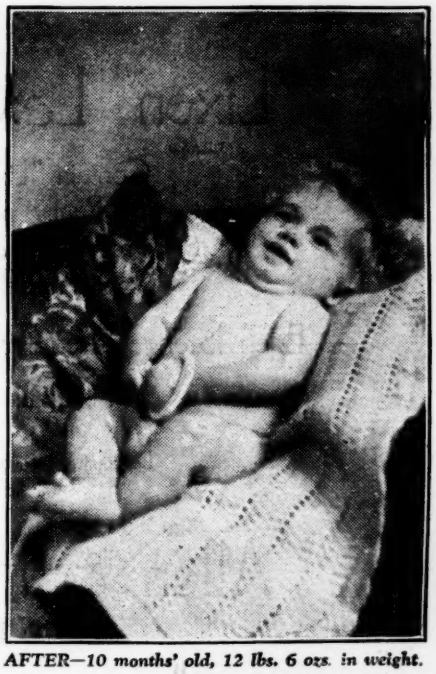


*Progress Chart*



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